User's Manual

Model 701974
PBL5000
5 GHz Low Capacitance Probe (10:1/20:1)

Thank you for purchasing the PBL5000 5 GHz Low Capacitance Probe (Model 701974). This user's manual explains usage, specifications, and the handling precautions. To ensure correct use, please read this manual thoroughly before beginning operation. After reading this manual, keep it in a safe place.

5th Edition: January 2022 (YMI)

Printed in Japan

YOKOGAWA

IM 701974-01E
5th Edition

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.

The following symbols are 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 attentions to actions or conditions that could cause light injury to the user or damage to the instrument or the user's data, and precautions that can be taken to prevent such occurrences.

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

Safety Precautions

This product is designed to be used by a person with specialized knowledge. To use this product correctly and safely, the general safety precautions described herein must be observed during all phases of operation. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.
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. In addition, before using the probe, read the manuals of the oscilloscope to thoroughly familiarize yourself with its specifications and operation.

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.

Notes about Usage

WARNING

Grounding of the measuring instrument
The protective grounding terminal of the measuring instrument must be connected to ground.

Connecting the object of measurement
Make sure to avoid an electric shock when connecting the probe to the object of measurement. Do not remove the probe from the measuring instrument after the object of measurement is connected.

Do not operated with suspected failures
If you suspect that the probe is damaged, contact your nearest YOKOGAWA dealer.

Nondestructive input voltage range
Do not apply a voltage exceeding the nondestructive input voltage between input and ground.

Must be grounded
Before connecting the probe input terminal to the item under test, check that the measuring instrument is properly grounded, that the probe output connector is connected to the BNC connector of the instrument, and that the earth lead is correctly connected to ground.

Do not operate in wet/damp conditions
To avoid electric shock, do not operate the probe in wet or damp conditions.

Do not operate in explosive atmosphere
To avoid injury or fire hazard, do not operate the probe in an explosive atmosphere.

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

Avoid exposed circuitry
To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Handling of the probe
Do not touch the probe's input terminal or the probe itself with wet hands.

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 immediately.

CAUTION

Maximum input voltage
Do not apply any voltages exceeding the maximum input voltage to the probe.

French

AVERTISSEMENT

Mise à la terre de l'instrument de mesure
S'assurer de connecter la mise à la terre protectrice de l'instrument de mesure.

Connexion de l'objet de la mesure
S'assurer d'éviter un choc électrique lors de la connexion de la sonde à l'objet de la mesure. Ne pas retirer la sonde de l'instrument de mesure après avoir connecté l'objet de la mesure.

Ne pas utiliser en cas de défaillances suspectées
Si vous suspectez que la sonde est endommagée, contactez votre revendeur ou représentant commercial YOKOGAWA.

Plage de tension d'entrée non destructive
Ne pas appliquer de tension supérieure à la plage de tension d'entrée non destructive entre l'entrée et la terre.

Doit être mis à terre
Avant d'effectuer les connexions aux bornes d'entrée du produit, vérifiez que le connecteur de sortie est connecté au connecteur BNC de l'instrument de mesure et que le plomb de la terre est connectée à une mise à la terre appropriée.

Ne pas utiliser dans des conditions humides
Afin d'éviter un choc électrique, ne pas utiliser cette sonde dans des conditions humides.

Ne pas utiliser dans une atmosphère explosive
Afin d'éviter des risques de blessures ou d'incendie, ne pas utiliser cette sonde dans une atmosphère explosive.

Ne pas démonter ou modifier
Ne pas démonter ou modifier le produit. YOKOGAWA se dégage de toute responsabilité si vous démontez ou modifiez le produit.

Éviter les circuits exposés
Afin d'éviter des blessures, retirer les bijoux comme les bagues, montres et autres objets métalliques. Ne pas toucher les connexions et les composants exposés après mise sous tension.

Manipulation de la sonde
Ne pas toucher le terminal d'entrée de la sonde ou la sonde elle-même avec des mains mouillées.

Câble de signal endommagé
Si le câble de signal est déchiré et que le métal intérieur est exposé ou si une couleur différente de la gaine externe est visible, arrêter immédiatement d'utiliser ce câble.

ATTENTION

Tension d'entrée maximum
Ne pas appliquer à la sonde de tension dépassant la tension d'entrée maximum.

Waste Electrical and Electronic Equipment (WEEE)

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

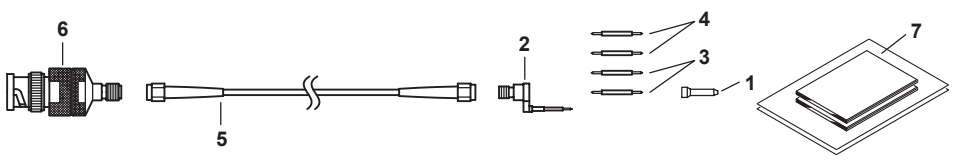
Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

1. Description

The PBL5000 5 GHz Low Capacitance Probe (Model 701974) is a low input capacitance passive probe (attenuation ratios of 1/10 or 1/20) for use with oscilloscopes having an input impedance of 50 Ω. The attenuation ratio can be changed by replacing the resistor on the probe tip.

2. Appearance

As shown in the figure below, the probe consists of the probe itself, and standard parts.



No.	Standard Parts	Part No.
1.	Sleeve	B8099JE
2.	Probe head	B8099JF
3.	450 Ω resistor (2 pcs)	B8099FE
4.	950 Ω resistor (2 pcs)	B8099FF
5.	Probe cable	–
6.	SMA(J)-BNC(P) conversion adapter	–
7.	Manuals (see below)	–

Manual Title	Manual No.	Description
Model 701974 PBL5000 5GHz Low Capacitance Probe (10:1/20:1) User's Manual	IM 701974-01E	This manual. Explains usage, specifications, and the handling precautions of the 701974.
Model 701974 5GHz Low Capacitance Probe	IM 701974-92	Document for China
Inquiries	PIM 113-01Z2	List of worldwide contacts

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

3. Operation

The resistors are extremely easy to bend. Always use the resistor cover on the probe tip.
Connect the probe to an oscilloscope having an input impedance of 50 Ω. When connecting instruments with a BNC connector input, use the accessory SMA(J)-BNC(P) adapter.

CAUTION

Use a soft cloth to clean the dirt. Prevent damage to the probe. Avoid immersing the probe, using abrasive cleaners, and using chemicals contains benzene or similar solvents.

French

ATTENTION

Utiliser un chiffon doux pour nettoyer la sonde. Faire attention de ne pas casser la sonde. Ne pas immerger la sonde dans un liquide ni utiliser de nettoyants abrasifs sur la sonde. Ne pas utiliser de benzène ni d'autres solvants sur la sonde.

Note

- Calibration of this instrument is not guaranteed. No test certificate is available.
- Accurate measurements may not be possible near objects with strong electromagnetic fields such as transformers, large current circuits, or wireless equipment.

4. Specifications

Item	Specifications
Standard operating environment	Temperature: 23 °C ±5 °C Humidity: 55 % ±10 % RH (no condensation)
System requirements	Temperature: 5 °C to 40 °C Humidity: 20 % to 80 % RH (no condensation)
Storage environment	Temperature: –20 °C to 60 °C Humidity: 20 % to 80 % RH (no condensation)
Total length of probe	Approximately 1.1 m
Connector type	SMA
Input resistor[1]	Within ±2 % of 450 Ω Within ±2 % of 950 Ω
Input capacitance	450 Ω: 0.25 pF (Typical[2]) 950 Ω: 0.4 pF (Typical[2])
Attenuation ratio[3]	Within ±3.5 % of 10:1 Within ±3.5 % of 20:1
Frequency bandwidth[4]	DC to 5 GHz (–3 dB or more)
Rise time[4]	70 ps or less (Typical[2])
Maximum input voltage	20 Vrms, 40 VACpeak
Nondestructive input voltage	20 Vrms, 40 VACpeak

1 When no load is present. In the standard operating environment.
2 Typical value represents a typical or average value. It is not strictly guaranteed.
3 In combination with an oscilloscope having an input resistance of 50 Ω. In the standard operating environment.
4 When the distance between the probe tip and ground is 9 mm. In the standard operating environment.