

# 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 701974. To ensure correct use, please read this manual thoroughly before beginning operation. After reading the manual, keep it in a convenient location for quick reference whenever a question arises during operation.

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

- PIM113-01Z2 List of worldwide contacts

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**YOKOGAWA** ◆

IM 701974-01E  
4th Edition

### Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the software's performance and functions. The figures given in this manual may differ from those that actually appear on your screen.
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- 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 attention 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.

Make sure to comply with the safety precautions mentioned hereafter when handling the probe. YOKOGAWA assumes no responsibility for any consequences resulting from failure to comply with these safety precautions. Also, read the User's Manual of the measuring instrument thoroughly so that you are fully aware of its specifications and handling, before starting to use the probe. This manual is part of the product and contains important information. Store this manual in a safe place close to the instrument so that you can refer to it immediately. Keep this manual until you dispose of the instrument.

#### 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.

**Make sure to comply with the following safety precautions in order to prevent accidents such as an electric shock which impose serious health risks to the user and damage to the instrument.**



#### 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 operate with suspected failures

If you suspect that there is damage to this probe, have it inspect by a service personnel.

##### 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 this probe in wet or damp conditions.

##### Do not operate in explosive atmosphere

To avoid injury or fire hazard, do not operate this 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



#### 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.

When disposing products in the EU, contact your local Yokogawa Europe B.V. office.

Do not dispose in domestic household waste.

### Authorized Representative in the EEA

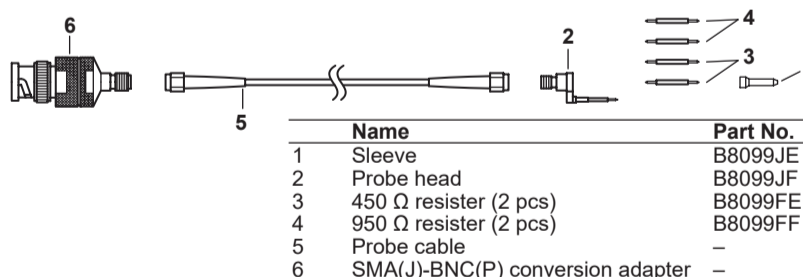
Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

### 1 Description

The model 701974 PBL5000 5 GHz Low Capacitance Probe 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 accessories.



### 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.
- Bringing the probe near transformers, circuits with large currents, wireless devices, or other objects emitting.

## 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 <sup>1</sup>	Within ±2% of 450 Ω Within ±2% of 950 Ω
Input capacitance	450 Ω: 0.25 pF (Typical <sup>2</sup> ) 950 Ω: 0.4 pF (Typical <sup>2</sup> )
Attenuation ratio <sup>3</sup>	Within ±3.5% of 10:1 Within ±3.5% of 20:1
Frequency bandwidth <sup>4</sup>	DC to 5 GHz (-3 dB or more)
Rise time <sup>4</sup>	70 ps or less (Typical <sup>2</sup> )
Maximum input voltage	20 Vrms, 40 VACpeak
Nondestructive input voltage	20 Vrms, 40 VACpeak

1 When no load is present. 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. Standard operating environment.

4 When the distance between probe tip and ground is 9 mm. Standard operating environment.