User's Manual

Model 700988
400 MHz Passive Probe
Switchable attenuation ratio of 1/10 and 1/1

Thank you for purchasing the model 700988 400 MHz Passive Probe. 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

9th Edition: March 2018 (YMI)

YOKOGAWA ◆

IM 700988-01E
9th 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 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.

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 manualin 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
Make sure to connect the protective grounding of the measuring instrument.

Ground lead of the probe
Make sure to connect the ground lead of the probe to the grounding potential.

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.

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

Make sure not to exceed the oscilloscope's maximum input voltage in the following cases:
- When the probe attenuation ratio is 1:1
- When the oscilloscope's input coupling is AC
  DC voltage of the same electric potential as the probe's input is applied to the oscilloscope's input.

Do not operate with suspected failures
If you suspect that there is damage to this probe, contact your nearest YOKOGAWA dealer or sales representative.

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.

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 supply 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.

Fil de terre de la sonde
S'assurer de connecter le fil de terre de la sonde au potentiel de mise à la terre.

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.

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

S'assurer de ne pas dépasser la tension d'entrée maximum de l'oscilloscope dans les cas suivants
- Lorsque le ratio d'atténuation de la sonde est 1:1
- Lorsque le couplage d'entrée de l'oscilloscope est en CA.
  La tension en CC du même potentiel électrique que l'entrée de la sonde est appliquée à l'entrée de l'oscilloscope.

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

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.

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

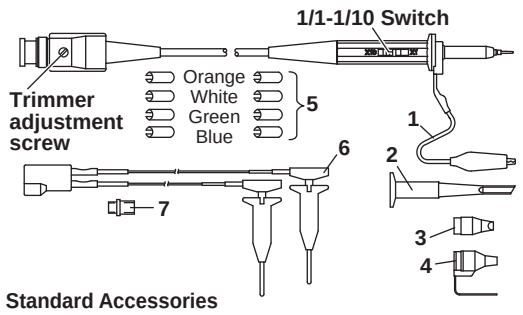
Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

Description

The model 700988 is a 1 MΩ passive probe with switchable attenuation ratio of 1/10 and 1/1.

Appearance

This probe is composed of the probe and its accessories. Optional accessories are available to meet various applications.



Standard Accessories

	Name	Part No.
1	Ground lead	B9852CW
2	Pinchers tip	B9852CX
3	IC test tip	B9852CY
4	Ground attachment	B9852CZ
5	Marker tip	B9852DH

Optional Accessories (Sold Separately)

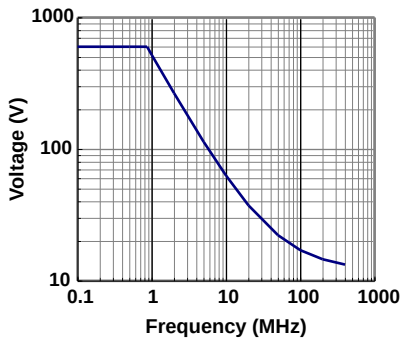
	Name	Part No.
6	Mini clip converter	B9852CR
7	BNC adapter	B9852CS

Specifications

Item	Specifications	Conditions
Probe length	1.5 m	
Connector type	BNC	
Input resistance [1]	10 MΩ ±2%	In conjunction with an oscilloscope with an input impedance of 1 MΩ ±1%.
Matching Input Capacity (at 1/10)	Approx. 15 pF to 25 pF	Oscilloscope measurement input capacity
Input capacitance		
At attenuation ratio of 1/10:	Approx. 14 pF	In conjunction with an oscilloscope with an input impedance of 1 MΩ ±1%.
At attenuation ratio of 1/1:	150 pF max.	Probe only
Attenuation ratio[1]	1/10 ±2%	In conjunction with an oscilloscope with an input impedance of 1 MΩ ±1%.
Bandwidth		
At attenuation ratio of 1/10:	DC to 400 MHz (-3 dB or less)	Subject to change depending on type of oscilloscope used.
At attenuation ratio of 1/1:	DC to 6 MHz (-3 dB or less, typical [2])	Subject to change depending on type of oscilloscope used and measurement conditions.
Rise time		
At attenuation ratio of 1/10:	900 ps max.	Subject to change depending on type of oscilloscope used.
At attenuation ratio of 1/1:	58 ns max. (typical [2])	Subject to change depending on type of oscilloscope used and measurement
Max input voltage [3]	600 V (DC + AC peak) or 424 Vrms	Frequency of the AC needs to be less than 100 kHz.
Operating environment		
Temperature range	+5°C to +40°C	
Humidity range	20% RH to 80% RH	
Storage environment		
Temperature range	-20°C to +70°C	
Humidity range	80% RH or less	
Operating altitude	2000 m or less	

1: In case of selecting the attenuation as 1/10.
2: Typical (or average) value; not guaranteed.
3: In case of selecting the attenuation as 1/10. The maximum allowable input decreases depending on the frequency. Refer to the derating curve.

Max Input Voltage derating curve



Complied Standard

This product is compliance with the following categories of IEC61010-031:

Measurement Category II	600 V(DC+ACpeak)
Pollution Degree 2	Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.

Definitions and Examples of IEC Measurement Category
Measurement category II (CAT II)

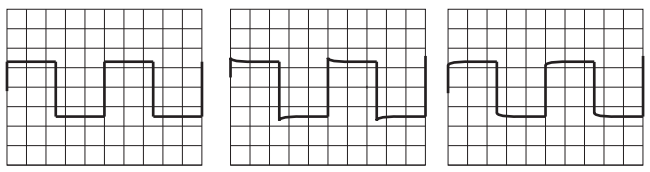
Definition:	Measurement category II is for measurements performed on circuits directly connected to the low voltage installation.
Examples:	Measurement on household appliances, portable tools, and similar devices.

Operation

Use adequate attachment suitable for the point to measure.
Before using the probe with attenuation ratio of 1/10, adjust its capacitance by tuning the trimmer.
The attenuation can be selected using the 1/1-1/10 switch.
Make sure the maximum input voltage of oscilloscope when the attenuation is selected as 1/1.

Adjustment

1. Connect the probe connector to the input of the oscilloscope, and connect the tip of the probe to the CAL signal output terminal.
2. Change the Time/Div and the V/Div to get the display shown below. And tune the trimmer to get the correct waveform.



Correct Waveform **Over Compensation** **Inadequate Compensation**