

User's Manual

Model 701920 Differential Probe for DL Series

Thank you for purchasing the Differential Probe (Model 701920) for the DL series. 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 701920-01E
6th Edition

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.



Risk of electric shock

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.



Risque de choc électrique

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 inspected by a service personnel.

Nondestructive input voltage range

Do not apply any voltages exceeding ± 40 V(DC+AC peak) between input and earth.

Must be grounded

Before connecting the input terminal of the probe to the object of measurement ensure that the measuring instrument is properly grounded and that the probe's output connector is attached to the BNC connector of the measuring instrument.

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.

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.

Do not disassemble or modify

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

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

Nondestructive input voltage range

Do not apply any voltages exceeding the Nondestructive input voltage range to the probe.

Use proper power source

Use the power supply terminal for the probe of DL series, or use the 700938 or 701934 power supply. Do not operate this probe from a power source that applies more than the voltage specified.

Conditions of use

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

Operating environment limitations

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



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 ± 40 V (c.c. + crête c.a.) entre l'entrée et la terre.

Doit être mis à terre

Avant de connecter la borne d'entrée de la sonde à l'objet de mesure, vérifiez que l'instrument de mesure est correctement mis à la terre et que le connecteur de sortie de la sonde est raccordé au connecteur BNC de l'instrument de mesure.

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.

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.

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.

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

Plage de tension d'entrée non destructive

N'appliquez aucune tension supérieure à la plage de tension d'entrée non destructive à la sonde.

Utilisez une source d'énergie appropriée

Utilisez la borne d'alimentation pour la sonde de la série DL ou utilisez l'alimentation 700938 ou 701934.

Ne faites pas fonctionner cette sonde à partir d'une source d'alimentation qui utilise plus de tension que celle spécifiée.

Conditions d'utilisation

Ce produit n'est pas conçu ou fabriqué pour des applications nécessitant une fiabilité élevée sur une longue période.

Limitations relatives à l'environnement opérationnel

Ce produit est un produit de classe A (pour environnements industriels). L'utilisation de ce produit dans une zone résidentielle peut entraîner une interférence radio que l'utilisateur sera tenu de rectifier.

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

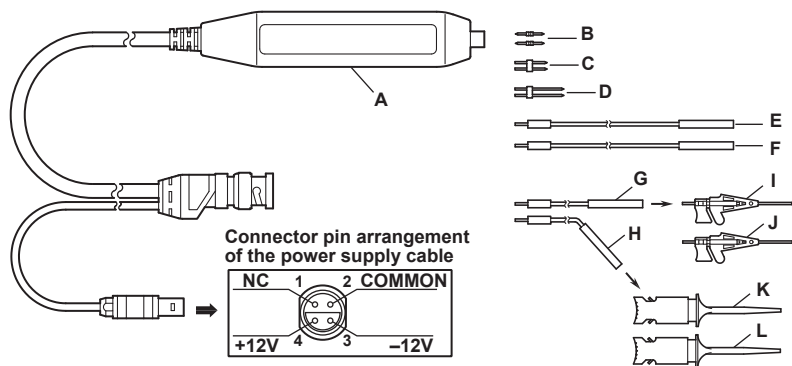
Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

1. Description

The 701920 Differential Probe is an active probe with a frequency bandwidth of 500 MHz and attenuation ratio of 10 : 1.

2. Appearance

As shown in the following illustration, the probe consists of a main body and standard accessories.



A Differential probe

Standard Accessories

Name	Qty
B Single pin	6
C Twin pin adapter (sml)	2
D Twin pin adapter (lg)	2
E Connection lead, red (long)	1
F Connection lead, black (long)	1
G Connection lead, red (short)	1
H Connection lead, black (short)	1
I Pincher tip, red (sml)	1
J Pincher tip, black (sml)	1
K Pincher tip, red (lg)	1
L Pincher tip, black (lg)	1

Optional Accessories

Name	Part No.
B to L Accessories for Differential probe	B9852SZ

3. Specifications

Item	Specifications
Frequency bandwidth ¹	DC-500 MHz for probe
Input type	Balanced differential input
Attenuation ratio ^{1,2}	10 : 1 ±3% when connected to a resistance of 50 Ω ±1%
Output offset voltage ^{1,2}	±5 mV (±50 mV when converted into input terminal)
Input resistance/capacity (typical) ³	100 kΩ/2.5 pF (each side to ground)
Differential allowable voltage range (between + - terminal)	±12 V
Common mode input voltage range	±30 V
Max input voltage (to ground) ⁴	±40 V (DC + AC peak)
CMRR (typical value) ³	60 dB (1 MHz), 17dB(500 MHz)
Operating temperature	5 to 40 °C
Operating humidity	25 to 85% RH(no condensation)
Operating altitude	2000 m or more
Storage temperature	-20 to 60 °C
Storage humidity	25 to 85% RH(no condensation)
Storage altitude	3000 m or more
Power supply voltage	±12 V ±1 V (Usable range: 11 to 13 V or -11 to -13 V)
Power supply current	Current of the power supply terminal is less than 125 mA
Warm-up time	At least 30 minutes
External dimensions	111 mm × 22 mm × 14 mm (excluding cable and accessory)
Total cable length	1.2 m (probe cable) 1 m (power supply cable)
Weight	Approx. 130 g
Emission	Complying standards EN61326-1 Class A EN55011 Class A, Group 1 EMC standards of Australia and New Zealand EN55011 Class A, Group 1 This product is a Class A (for industrial environment) product. Operation of this product in a residential area may cause radio interference in which case the user is required to correct the interference.
Immunity	Complying standards EN61326-1 Table 1

1 Reference operation conditions:

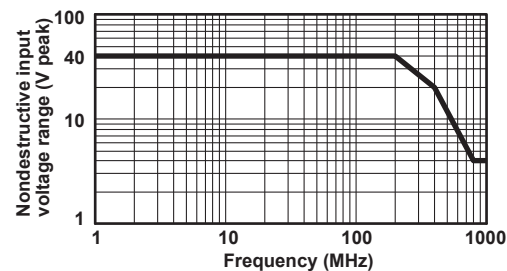
Ambient temperature 23 ± 5°C; Ambient humidity 55 ± 10%; 30 minutes after the power supply is applied.

2 The accuracy is the total of the attenuation ratio accuracy and offset voltage.

3 Typical values are typical or mean values. They are not strictly guaranteed.

4 Derating is applied towards frequencies.

Relation between frequency and input voltage derating.



4. Operation

1. Connect this probe's power supply cable to the probe power supply connector on the DL series instrument, 700938, or 701934.
2. Simply plug-in the BNC output connector to the vertical input of an oscilloscope. In this case set the input resistance of the oscilloscope to 50 Ω.
3. Using the appropriate probe accessories, connect the input to the circuits under measurement.



WARNING

- To protect against electric shock the ground side of the output cable (the shielded side of the BNC connector) must be grounded.
- When disconnecting the BNC connector, always first separate the probe from the high voltage parts of the circuit under measurement.



CAUTION

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

French



AVERTISSEMENT

- Pour éviter les chocs électriques, la mise à la terre du câble de sortie (côté blindé du connecteur BNC) doit être effectuée.
- Lors de la déconnexion du connecteur de sortie BNC de la sonde, mettre d'abord HORS tension le circuit faisant l'objet de la mesure.



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

- Accurate measurement may not be possible near objects with strong electric fields (like cordless equipment) or strong magnetic fields (like transistors or large current circuits).
- To take accurate measurements, we recommend that you calibrate the probe once a year.