

User's Manual

Model 701920 Differential Probe for DL Series

Thank you for purchasing the YOKOGAWA 701920 Differential Probe.
To optimize all the functions of the instrument, please read the manual thoroughly before operating it.

Disk No. DL06
1st Edition : April 2001 (YK)
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YOKOGAWA
Yokogawa Electric Corporation

IM 701920-01E
1st Edition

Safety Precautions

Make sure to comply with the safety precautions mentioned hereafter when handling the probe.
YOKOGAWA ELECTRIC Co. 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.

General definitions of safety symbols and markings

-  This symbol indicates the risk of injury, death of personnel, or damage to the instrument.
-  Protective grounding terminal.
-  Danger. High voltage.

WARNING This symbol calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury or death of personnel.

CAUTION This symbol calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part of the product.

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 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 without cover**
To avoid electric shock or fire hazard, do not operate this probe with the cover removed.
- **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.



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

Terms appear in this manual

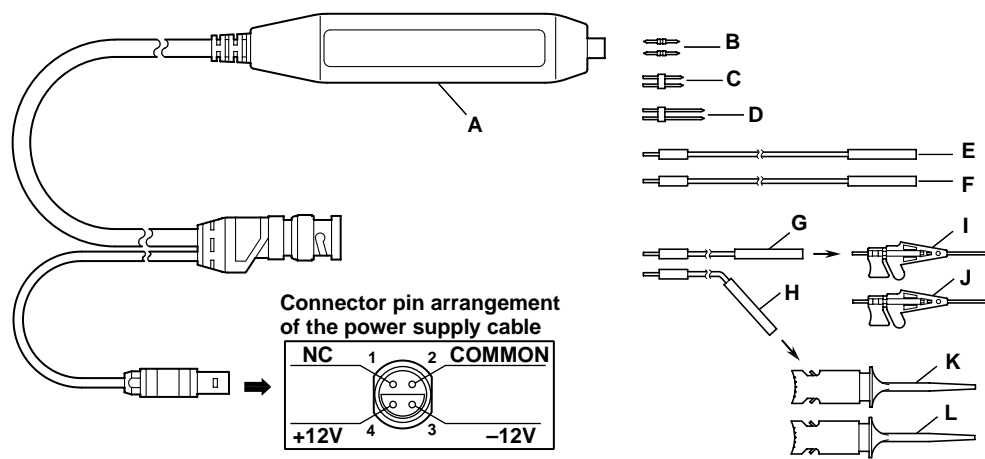
Note Provides information that is important for proper operation of the instrument.

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

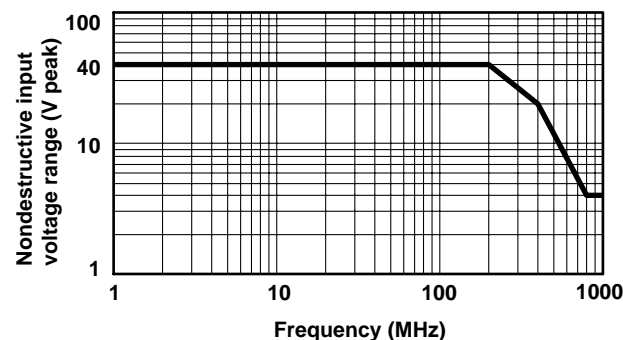
Input type	Balanced differential input
Frequency bandwidth	DC-500 MHz for probe *1
Attenuation ratio	10 : 1 $\pm 3\%$ when connected to a resistance of $50 \Omega \pm 1\%$ *1
Output offset voltage	± 5 mV (± 50 mV when converted into input terminal) *1
Differential input voltage range	± 12 V
Common mode input voltage range	± 30 V
Nondestructive input voltage range	± 40 V(DC + AC peak) *2
Input resistance(typical value)	100K Ω (relative to ground)
Input capacity(typical value)	2.5pF(relative to ground)
CMRR(typical value)	60dB(1MHz), 17dB(500MHz)
External dimensions	111 mm \times 22 mm \times 14 mm(excluding cable and accessory)
Total cable length	1.2 m(probe cable) 1 m(power supply cable)
Weight	Approx. 130 g
Operating temperature	5 to 40 °C
Operating humidity	25 to 85% RH(no condensation)
Storage temperature	-20 to 60 °C
Storage humidity	25 to 85% RH(no condensation)
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
EMC	Complying standard : EN55011 : 1998(Class B) EN61000-3-2 : 1995/A1/A2:1998 EN61000-3-3 : 1995 EN50082-1 : 1997

*1 Reference operation conditions:

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

*2 For the relation between frequency and input voltage derating see the graph below.

Relation between frequency and input voltage derating.



4. Operation

1. Connect the power supply probe of the product to the power supply connector of DL series or to 700938.
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 50Ω .
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.

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).