User's Manual

Model 701922

Differential Probe for DL Series

Safety Precautions

This probe is in compliance with IEC-61010-1,IEC-61010-2-031 CAT.I, Pollution Degree 2.
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.

- **The following symbols are used on this instrument.**

⚠ To avoid injury, death of personnel or damage to the instrument, the operator must refer to an explanation in the User's Manual or Service Manual.

- **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.
- **Earth cable of the probe**
  Make sure to connect the earth cable of the probe to the ground (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.
- **Do not operated with suspected failures**
  If you suspect that there is damage to this probe, have it inspect by a service personnel.
- **Observe maximum working voltage**
  Do not apply a voltage exceeding 60 V peak between each input lead and ground, or between the input leads themselves.
- **Must be grounded**
  This probe must be grounded with the BNC shell and an auxiliary grounding terminal, through the grounding conductor of the power cord of the measuring instrument or other appropriate grounding conductor.
  Before making connections to the input terminals of the product,ensure that the output connector is attached to the BNC connector of the measuring instrument and the auxiliary grounding terminal is connected to a proper ground,while the measuring instrument is properly grounded.
- **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 aviod 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

- **Maximum input voltage**
  Do not apply any voltages exceeding the maximum input voltage to the probe.
- **Correct use of the power supply**
  Use with the DL series probe power supply terminal, or the 700938.
- **Connecting the external power supply to the probe**
  Always turn OFF the power switch when connecting or disconnecting the power supply.

- **The following symbols are used in this manual.**

⚠ Affixed to the instrument. Indicates danger to personnel or instrument and the operator must refer to the User's Manual. The symbol is used in the User's Manual to indicate the reference.

WARNING Describes precautions that should be observed to prevent serious injury or death to the user.

CAUTION Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

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

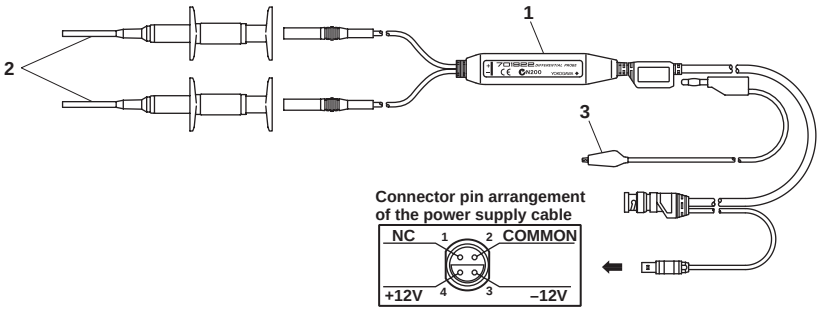
1 Description

By using this device, oscilloscopes with single-ended input can be easily used as oscilloscopes with differential inputs.

2 Appearance

The differential probe looks as follows and consists of the following equipment supplied.

YOKOGAWA ◆
Yokogawa Electric Corporation



Supplied equipment

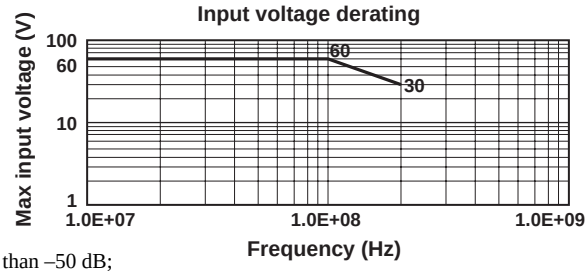
1	Probe
2	Pinchers tips
3	Ground extention lead(length=50cm)

Accessories

Pinchers tip	black	B9852MF
Pinchers tip	red	B9852MG

3 Specifications

Frequency bandwidth*	DC–200 MHz (-3 dB)	
Input type	Balancing difference input	
Attenuation ratio	10:1	
Output offset voltage*	±5 mV	
Input resistance and capacity(typical)	500 kΩ + 7 pF each side to ground	
Differential allowable voltage (between + – terminal)	±20 V (DC + ACpeak)	
Max common mode voltage	±60 V(DC + ACpeak)	
Max input voltage(to ground)	±60 V(DC + ACpeak)	
CMRR(typical)	100 Hz: less than –80 dB; 10 MHz: less than –50 dB;	
Output voltage	±2 V (DC + ACpeak)	
Output impedance(typical)	50 Ω	
Gain accuracy*	±1%	
Operating Environment:	5–40°C, 25–85% (no condensation may be present)	
Storage Environment	-30–60°C, 25–85% (no condensation may be present)	
Power Voltage	±12 V ±1 V	
Complying standard	Safety standard	EN61010-1 : 1993
		EN61010-2-031 : 1994
		Overvoltage categoly (Installation Category) I
		Pollution degree 2
	EMC	EN61326-1 : 1997+A1 : 1998
		EN55011 : 1998



* : Ambient temperature 23±5°C

4 Operation

1. Connect this probe's power supply cable to the probe power supply connector on the DL series instrument or to the 700938.
2. Simply plug-in the BNC output connector to the vertical input of a oscilloscope, and connect the auxiliary grounding terminal to a proper ground. If necessary, use a ground extention lead. Set the oscilloscope's input resistance 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.
- When connecting the power supply, always first remove the test lead from the circuit under measurement.

CAUTION

- This probe is to carry out differential measurement between two points on the circuit under measurement. This probe is not for electrically insulating the circuit under measurement and the measuring instrument.
- 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.

- Connect the BNC connector to the input terminal of the oscilloscope and for two point measurement (differential measurement), connect both input leads. Because the performance declines in case you carry out measurements with only one input lead connected, make sure to always connect both.

Note

Accurate measurement may not be possible near objects with strong electric fields (such as cordless equipment, transformers, or circuits with large currents).

Disk No. DL05
1st Edition : June 2003