MODEL 986

DC VOLTAGE DIVIDER

OPERATION MANUAL

KIKUSUI ELECTRONICS CORPORATION, JAPAN

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1. GENERAL

The DC Voltage Divider, when used in combination with an appropriate digital voltmeter such as Kikusui Model 156A, can accurately measure a voltage up to maximum ±30 kV DC. It is most suitable for measurement of high voltages of television receivers and other high voltage power supplies. The DC Voltage Divider is incorporated with a panel voltmeter which enables the Divider to be used also as an indicating meter.

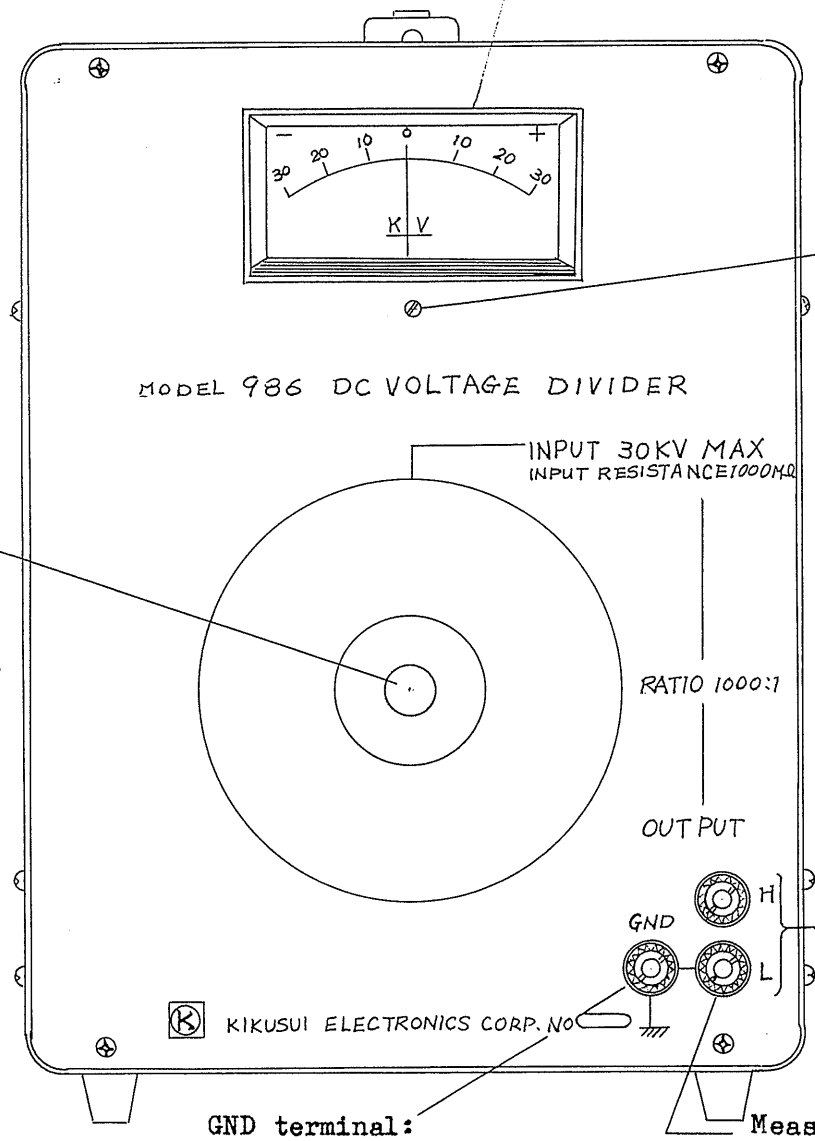
2. SPECIFICATIONS

Maximum applicable voltage:	±30 kV DC
Input resistance:	1000 MΩ ±2%
Voltage dividing ratio:	1000 to 1
Accuracy:	±5% (calibrated with 10 MΩ load*)
Ambient temperature and humidity:	15 to 35°C, below 75% RH
Output resistance:	1.1 MΩ ±5%
Voltmeter accuracy:	±5%
External dimensions:	203 (W) x 273 (H) x 313 (D) mm
(Maximum dimensions):	(207 (W) x 295 (H) x 355 (D) mm)
Weight:	Approx. 4 kg

* Equivalent with input resistances of Models 156A and 156L Digital Voltmeters.

3. OPERATING PROCEDURE

3.1 EXPLANATION OF THE FRONT PANEL



3.2 EXPLANATION OF THE REAR PANEL

RATIO ADJ: This semi-fixed resistor must be so adjusted that the voltage dividing ratio is made 1000:1.

3.3 DC VOLTAGE MEASUREMENT

(1) Connect the GND terminal of the front panel to ground.

(2) Since the "L" terminal of the low-voltage circuit is connected to the GND terminal within the Divider, the low voltage circuit of the measured voltage is automatically connected to ground. Therefore, prior to connecting the DC high voltage, ensure that there is no problem in grounding the DC high voltage circuit through the Divider.

(3) Connect a digital voltmeter (Kikusui 156A or 156L) to the OUTPUT terminals, ensuring that the polarities of the "H" and "L" terminals conform with those of the counterpart terminals of the digital voltmeter.

(4) Turn off the power of the DC high voltage circuit to be measured. Connect securely the low voltage line of the measured circuit to the OUTPUT "L" terminal of the Divider.

(5) Connect securely the high voltage line of the measured circuit to the INPUT terminal of the Divider, using a well-insulated cable (such as polyethylene-insulated cable).

(6) Set the digital voltmeter at the 30 V range. If the measured voltage is below 3 kV, set the digital voltmeter at the 3 V range.

(7) Turn on the power of the measured voltage circuit. As the DC high voltage to be measured is applied to the Divider, the measured

voltage is indicated by the voltmeter of the Divider and displayed by the digital voltmeter.

(8) The value of the measured voltage can be known by multiplying the digital voltmeter reading by a factor of 1000. For example, if the reading is +30 V, the measured voltage is +30 kV. In this case the voltmeter of the Divider will indicate approximately 30 kV in the positive polarity direction (the voltmeter pointer deflects rightwards). The voltmeter may be used to read a rough value.

3.4 PRECAUTIONS

(1) Be extremely careful not to touch an exposed part of the high voltage circuit.

(2) The connections must be made very securely, not only of the high voltage line but of the low voltage line also. Note that the operator is subjected to electric shock if he touches the digital voltmeter housing with the low voltage line disconnected or loosely connected.

(3) The input impedance of the Divider is 1000 MΩ ±2%. When the Divider is connected to a voltage source of 25 kV for example, a measuring current of approximately 25 μA will be drained into the Divider. If the internal impedance of the voltage source is very high, a voltage drop which is not negligible will be caused by this current drain. In such a case, the measured value must be corrected by compensating for the voltage drop caused by the current drain.

(4) As for the digital voltmeter to be used being connected to the OUTPUT terminal of the Divider, a Kikusui Model 156A or 156L Digital Voltmeter is immediately applicable without requiring any

calibration. When other digital voltmeter or differential voltmeter is used, however, calibration is required.

(5) The Divider must be used under the specified environments. It must be calibrated periodically, once a year at the least. Prior to calibration, clean the INPUT terminal and its vicinity and other insulators on the chassis after pulling it out of the housing, using a dry cloth. This cleaning should be performed more frequently if the Divider is used in dusty atmosphere or high voltages are applied long periods to the Divider.

4. MAINTENANCE

4.1 ADJUSTMENT OF "RATIO ADJ" CONTROL

Clean the Divider as mentioned in Sub-section 3.4 "PRECAUTIONS," Item (5). Connect the digital voltmeter to the Divider, set the digital voltmeter at the 30 V range, connect the regulated standard high voltage supply to the INPUT terminal and OUTPUT "L" terminal, apply a voltage of +30 kV ±0.05% from the high voltage supply to the Divider, and adjust the RATIO ADJ control (located on the rear panel of the Divider) so that the digital voltmeter indicates +30.00 V.