

**DN700
(DN701)**

**OPERATORS
MANUAL**

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INTRODUCTION

The DN700 Digital Delay Line uses latest technology to achieve its truly superior performance. Special emphasis has been put on the design of the sensitive (and usually expensive) areas, as summarised below.

The Analogue to Digital and Digital to Analogue convertors utilised have been specially designed by our Engineers and are of the Successive Approximation (P.C.M.) type, which are recognised as giving the highest performance in digital audio applications. Automatic temperature and offset voltage tracking has been included to ensure long, drift free operation.

The input and output filters are of the seven pole elliptical type using FDNR (Frequency Dependant Negative Resistance) circuitry. This design gives optimum distortion and noise performance.

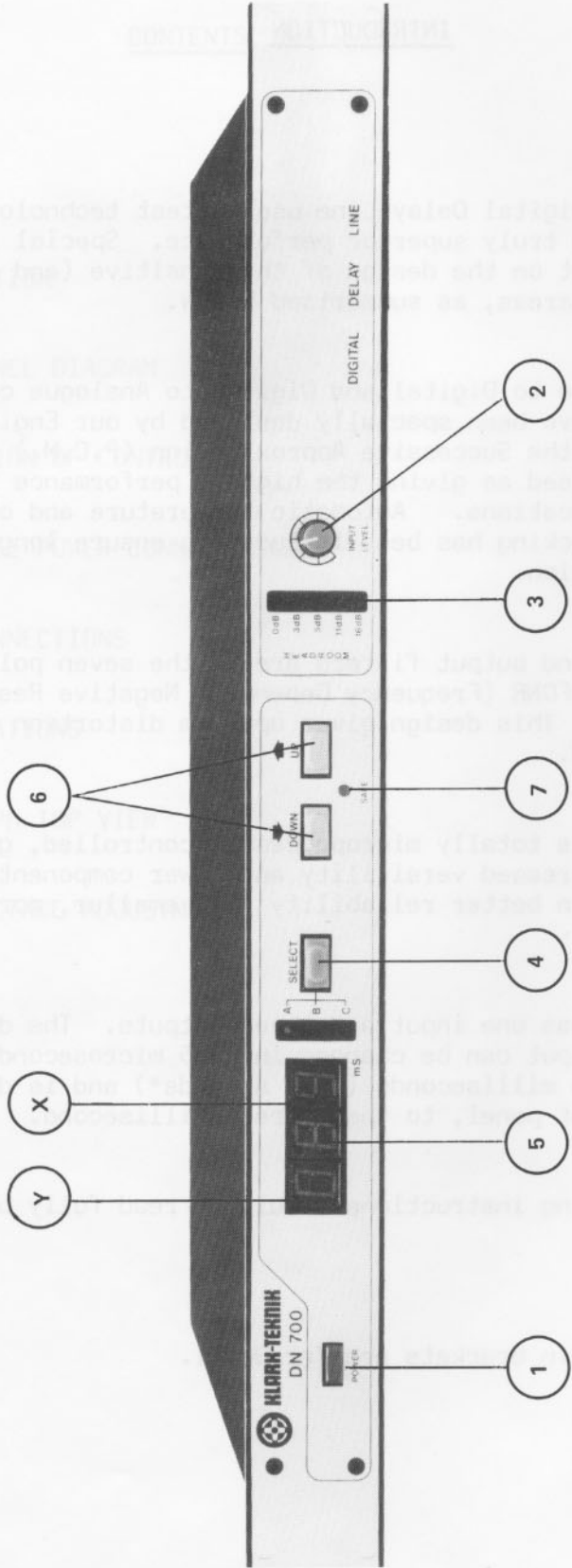
The DN700 is totally microprocessor controlled, giving the unit an increased versatility and lower component count, resulting in better reliability in a smaller, more economical package.

The DN700 has one input and three outputs. The delay time on each output can be changed in 26.5 microsecond steps from zero to 434 milliseconds (1.73 seconds*) and is displayed on the front panel, to the nearest millisecond.

The operating instructions should be read fully before using the unit.

* Figures in brackets are for DN701.

Fig. 1



CONTROLS

1. Power on/off switch

Before switching on, check that the unit has been set for the mains voltage being used. This is indicated on the rear panel.
2. Input Level Control

Should be set so that with normal signal the 3dB l.e.d. on the headroom indicator lights up during the loud passages.
3. Headroom Indicator

Indicates the headroom left in the digital section before clipping commences. The top l.e.d. (0dB) activates at 2dB below the clipping point.
Note: For maximum signal to noise performance the 3dB l.e.d. should light up during the loud passages.
4. Display Select Switch

Controls the display only and will not affect the delay settings. The l.e.d.s adjacent to the switch indicate the relevant output channel being displayed. Pressing the select switch will indicate the next output.
5. Display

Shows the amount of delay on the channel indicated, to the nearest millisecond. Accuracy is + or - 0.5 milliseconds - e.g. 1.25 milliseconds of actual delay will be displayed as 001 millisecond and 1.8 milliseconds will be displayed as 002 milliseconds.
6. Delay Setting Switches

Are used to increase or decrease the delay time on any of the three outputs. To alter any delay setting:- First select the channel required with the Display Select Switch. The display will show the present delay time. Then push either the Up or Down switch to alter the setting.
Note: The delay time can be adjusted in 26.5 millisecond steps, which is equivalent to 16,384 (65,536) different settings. To accommodate this the Up/Down switches have two modes of operation.

1. Depressing either switch for a short duration increases or decreases the delay time by one step (26.5 microseconds). The l.e.d. (marked X on Fig.1.) illuminates every time the switch is depressed.
2. If the switch is depressed but not released the delay time automatically increases (or decreases). The longer the switch is held down, the faster the delay setting changes. As soon as the switch is released the delay setting is held, so allowing a quick transition to any delay setting.

7. Safe Switch

Is an alternate action switch, and is located flush with the front panel, so that it cannot be pressed unintentionally. (Use a pencil or a matchstick to depress it). When pressed, the delay settings are frozen and cannot be altered by the Delay Setting Switches.

When the unit is in the SAFE position the l.e.d. (Marked Y on Fig.1) illuminates to indicate "SAFE" mode. To return the unit to normal operation, depress the SAFE switch again.

Note: The delay settings are stored in the Non-Volatile memory. When the power is switched off, the settings are retained (retention of more than one year without power). This applies in both the "Safe" and "Normal" modes of operation.

8. **Display Rotate** When in the "SAFE" mode, the display will automatically rotate showing the respective delay of each output for approx. one second. This facility can be cancelled by changing the position of the switch on the main circuit board labelled "Rotate" (See Fig.2 on page 8).

REAR PANEL CONNECTION

POWER

The power inlet socket should only be used with a standard I.E.C. connector and cable - one is supplied with each unit.

The mains voltage is indicated on the Safety Plate - ensure that the supply voltage is within + or - 10% of the indicated voltage.

The Voltage Range Switch allows the unit to be used with different A.C. Voltages. To change the voltage:-

1. Remove the mains cable and connector from the socket.
2. Remove the Safety Plate.
3. Move the switch to the alternative position.
4. Replace the Safety Plate with the new voltage showing outwards. The voltage shown on the plate (when screwed in position) is the only voltage that the unit can be used with.

To use the DN700 at any other voltage needs alteration to the internal connections. This must be carried out by an approved Klark-Teknik dealer or agent, or by qualified personnel (Details at rear of manual)

AUDIO

Input uses a differential electronically balanced circuit which is both voltage and current balanced, and achieves a symmetry of better than - 50dB from 20 - 10KHz.

Connections Pin 1 - Circuit Ground
Pin 2 - Signal Low (Cold)
Pin 3 - Signal High (Hot)

If used with unbalanced line, either pin 2 or pin 3 can be used as signal, the other pin can be either left open circuit or shorted to ground. (Note. if pin 2 is used for signal, the outputs will be out of phase with respect to the input when the delay setting is at zero).

Transformer balanced input is available, but is not retrofitable and must be requested on ordering.

Earth Lift Switch connects or disconnects the circuit ground from the chassis (mains ground), for use in case of ground loops.
FOR SAFETY REASONS DO NOT REMOVE THE EARTH FROM THE POWER CABLE.

The input level that can be accommodated by the DN700 is from 0dBu to + 18dBu.

Output The standard output is unbalanced

Connections - Pin 1 Circuit Ground
Pin 2 No Connection
Pin 3 Signal

This can be changed internally to make Pin 2 the signal as follows:-

1. Remove the jumper link which shorts out pins 2 and 3 on the sockets Skt.4, Skt.6, and Skt.8 (These are positioned next to each output socket, on the main circuit board see Fig.2. on page 8 at the end of the manual.
2. Join pins 2 and 4 on the same sockets. (Plugs can be obtained from your supplier to facilitate this).

Output transformers are available and can be retrofitted.

OUTPUT LEVEL is set at + 10dBu for maximum level i.e. the onset of the 0dB l.e.d. on the headroom indicator. This can be adjusted internally with the output level presets, labelled A,B and C which are situated on the main circuit board close to the output connectors. Range of adjustment is from Zero to + 18dBu for maximum level.

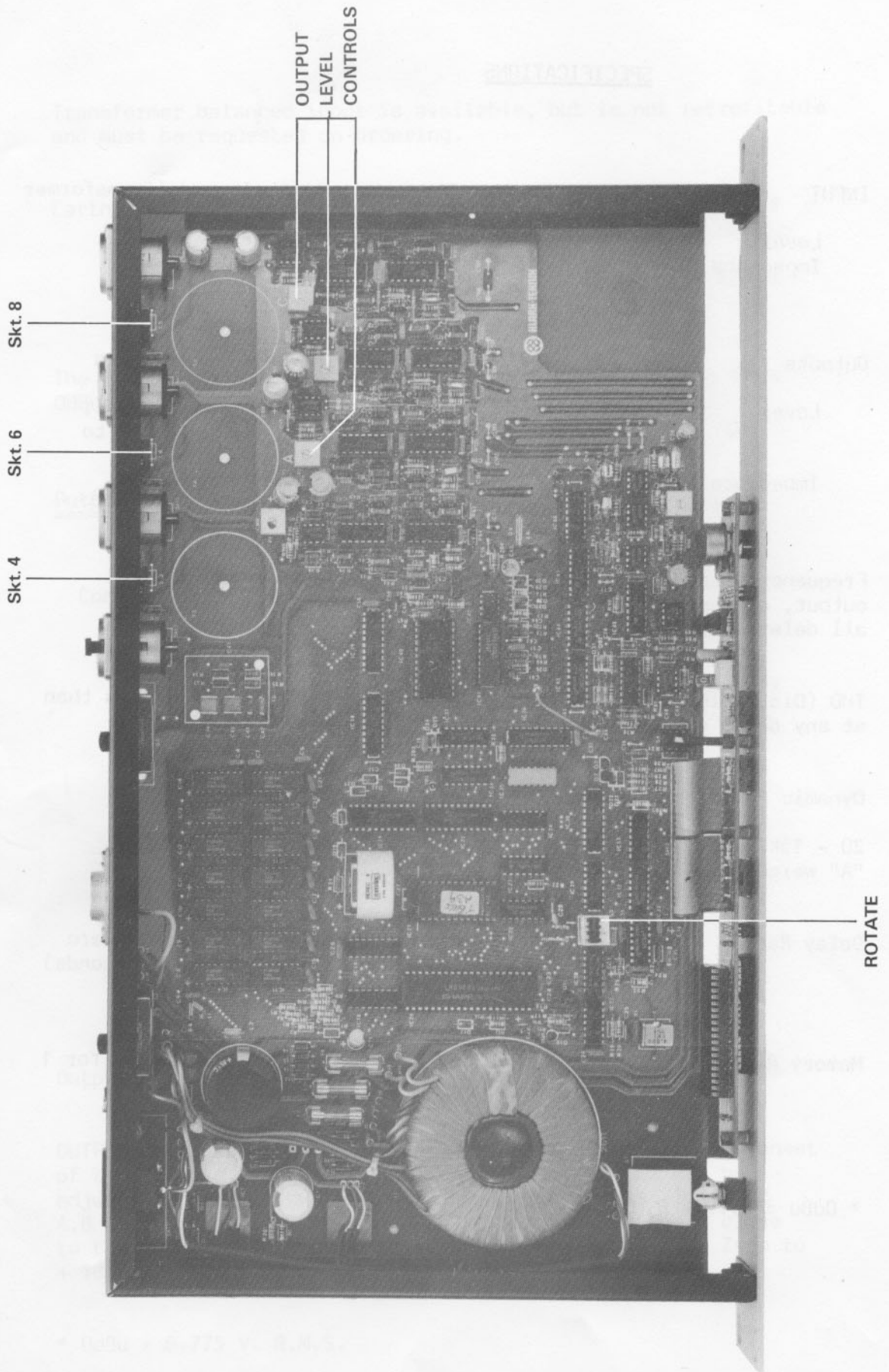
* 0dBu = 0.775 V. R.M.S.

SPECIFICATIONS

INPUT	Electronically balanced (Transformer to order) via XLR Connector.
Level	0dBu to + 18dBu *
Impedence	48K ohms unbalanced 96K ohms balanced.
Outputs	Three unbalanced (Transformers available)
Level	+ 10dBm nominal for max. level, internally adjustable from 0 to + 18dBm
Impedence	60 ohms to drive loads of 600 ohms and above.
Frequency Response (Any output, at any level at all delay settings)	20Hz - 15KHz \pm 1dB
THD (Distortion plus noise at any delay setting)	Less than 0.05% at 1KHz, less than 0.1% 20Hz - 10KHz.
Dynamic Range (at any delay setting)	
20 - 15KHz unweighted	better than 85dB
"A" weighted	better than 90dB
Delay Range	All outputs adjustable from Zero to 434 milliseconds (1.73 seconds) in 26.5 microsecond steps.
Memory Retention	All memory settings retained for 1 year minimum without power.

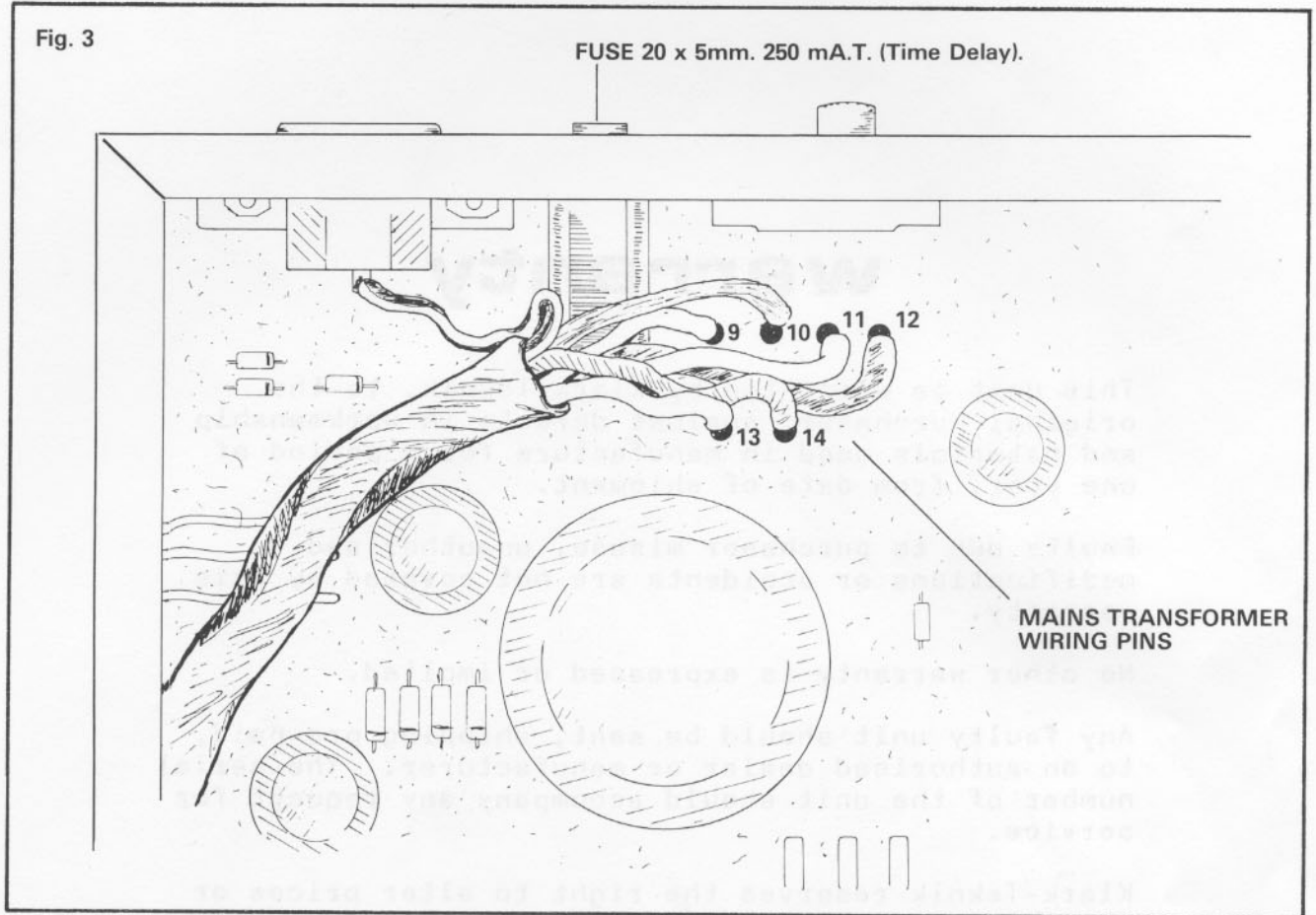
* 0dBu = 0.775V R.M.S.

Fig. 2



MAINS VOLTAGE ADJUSTMENT

Any changes to mains voltage should be carried out by Qualified Personnel.



SUPPLY VOLTAGE	TRANSFORMER PIN NUMBERS					
	9	10	11	12	13	14
205-240/103-120 v. A.C. 50/60Hz	RED	ORANGE	GREY	BLACK	BROWN	BLUE
185-220/93-110 v. A.C. 50/60Hz	BROWN	ORANGE	BLUE	BLACK	RED	GREY

NOTE Remove mains inlet plug/cable before changing fuse or removing covers.

warranty

This unit is warranted by Klark-Teknik, to the original purchaser, against defects in workmanship and materials used in manufacture for a period of one year, from date of shipment.

Faults due to purchaser misuse, unauthorised modifications or accidents are not covered by this warranty.

No other warranty is expressed or implied.

Any faulty unit should be sent, shipping pre-paid, to an authorised dealer or manufacturer. The serial number of the unit should accompany any request for service.

Klark-Teknik reserves the right to alter prices or specifications without notice.