

DESIGNS DEPARTMENT HANDBOOK

No. 3.260(81)

MX3/4 Clean Feed Mixer

C O N T E N T S

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2. OPERATION
3. PERFORMANCE
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D R A W I N G S

Circuit	D 48598 A1
Parts List	D 48599 A4
P.B. Comp. Loc.	D 48604 A2

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MX3/4 Clean Feed Mixer

1. INTRODUCTION

The MX3/4 is a 4U BMM P.C.B. designed to derive clean feeds. It was originally used in the EP5M/19 chassis; part of the EP10/18 Radio Continuity Equipment. There are 12 inputs designated 'A' to 'M' and 12 corresponding outputs designed 'not A' to 'not M'. There is also a 13th output (55C, 54C) which comprises the sum of all the inputs.

2. OPERATION

The MX3/4 has fixed gain and there are no operational controls.

3. PERFORMANCE

Gain (only one input driven)	0 dB $\pm$ 0.1 dB (-6 dB to output 55C/54C)
Frequency Response	40 Hz to 15 kHz, $\pm$ 0.1 dB relative to response at 1 kHz
Distortion	T.H.D. at 0 dBu and +16 dBu <0.1% (-60 dB) in the frequency range 40 Hz to 15 kHz
Peak Output	>18 dBu
Noise	<-77 dB, when inputs terminated with 300 $\Omega$ .
Input Impedance	>60 k $\Omega$ , T.E.R.
Output Impedance	94 $\Omega$ , T.E.R.
Power Requirements	$\pm$ 12.5 volts at 110 mA $\pm$ 10 mA
Crosstalk	>80 dB at 10 kHz between channels provided non-driven inputs are terminated with 300 $\Omega$ .

#### 4. CIRCUIT DESCRIPTION

The MX3/4 unit is intended for use as a clean feed mixer. There are 12 inputs designated 'A' to 'M' and 12 corresponding outputs designated 'not A' to 'not M'. There is also a 13th output (55C, 54C) which comprises the sum of all the inputs.

Input signals are applied to HA1-4741-S integrated circuit via a T.E.R. network (Transmitted Earth Reference). This circuitry has been designed to minimise the effect of stray pick-up of hum and noise in the input cables. By using a balanced network (signal at inverting and non-inverting inputs are equal in amplitude but of opposite polarity) interference signals tend to cancel out. The signal lead is connected to the non-inverting input.

Following the unity gain input stage, there is a phase-reverse IC1a (etc.) and following that virtual earth mixers which provide the required 'not outputs' and the combined output. These drive other equipment via T.E.R. sending resistors ( $2 \times 47 \Omega$ ) such as R162 and R161 etc. The output signals (pin 6) are in phase with the non-inverting pin of the input stage.

The MX3/4 circuit diagram is D 48598 A1.

#### 5. MAINTENANCE AND ALIGNMENT

In case of a fault condition check D.C. conditions without signal input:

##### Location

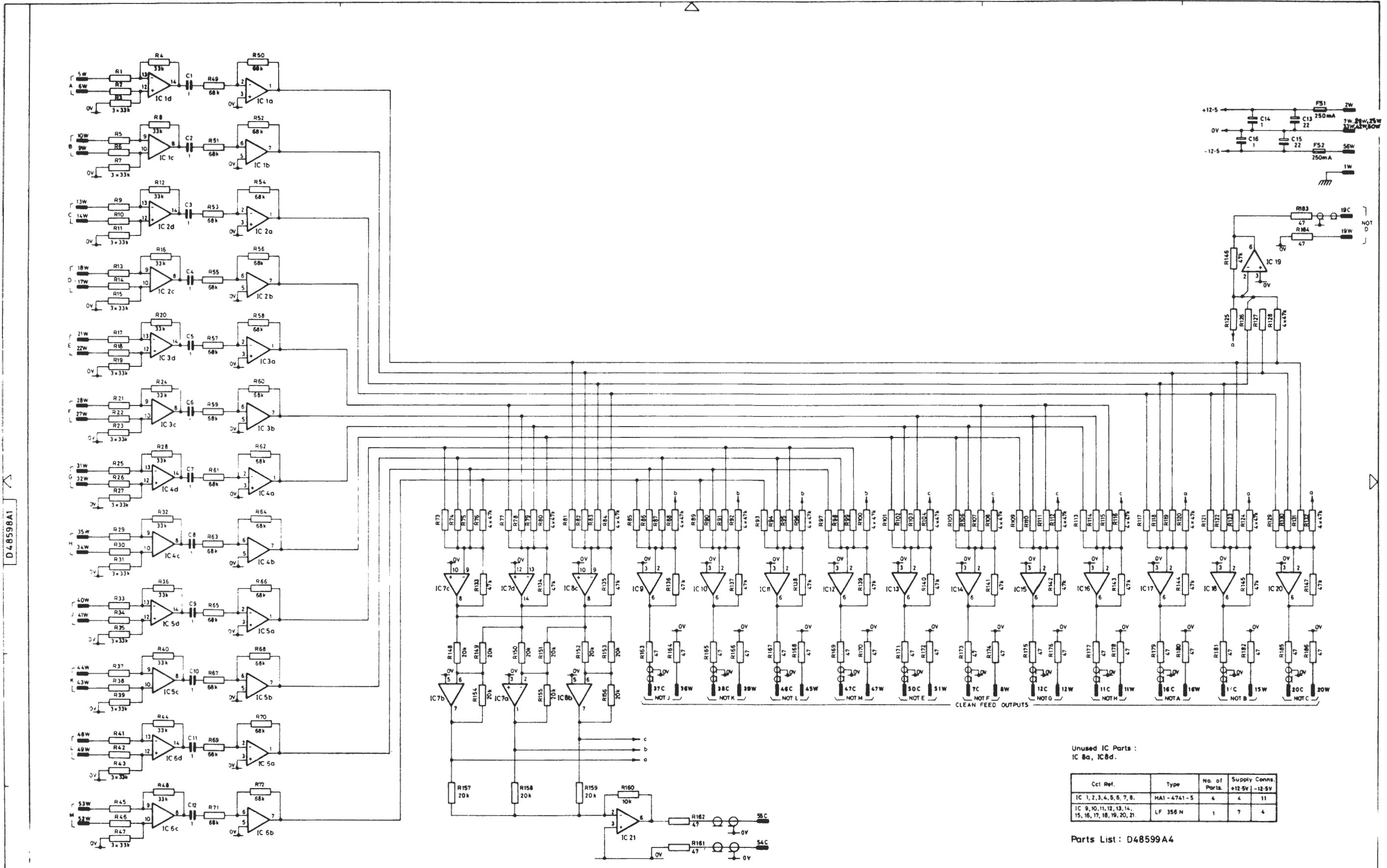
4741	pin 4	+12.5 volts
4741	pin 11	-12.5 volts
4741	output pins	0 volts $\pm 0.1$ volts
LF356	pin 4	-12.5 volts
LF356	pin 7	+12.5 volts
LF356	pin 6	0 volts $\pm 0.1$ volts

##### Signal Conditions

Typical reading of one channel

Input (5W-6W)	0 dB
IC1d, pin 14	0 dB
IC1a, pin 1	0 dB
IC8c, pin 8	0 dB
IC8b, pin 7	0 dB
IC7a, pin 1	0 dB
IC9 to IC16 pin 6	0 dB
IC18 to IC20 pin 6	0 dB
IC21 pin 6	-6 dB

The output of IC1a also drives IC18 and IC19, and via IC8b and IC7a all other mixers except the 'NOT A'. Similarly, the signal paths can be traced from all other inputs to their respective outputs. In case of signal loss check for inner to screen shorts of the screened cables under the screen plate. There are no alignment controls on this unit.



D48598A1

Unused IC Parts :  
IC 8a, IC 8d.

Ckt Ref.	Type	No. of Parts	Supply Conns.
IC 1, 2, 3, 4, 5, 6, 7, 8.	HA1-4741-5	4	4 11
IC 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21.	LF 356 N	1	7 4

Parts List : D48599A4

THIRD ANGLE PROJECTION

ORIGINAL FRAME SIZE  
574mm x 821mm

CHANGE  
87-3-81

**BBC**  
BS AV1

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**MX 3/4**  
**CLEAN FEED CARD.**  
**CIRCUIT.**

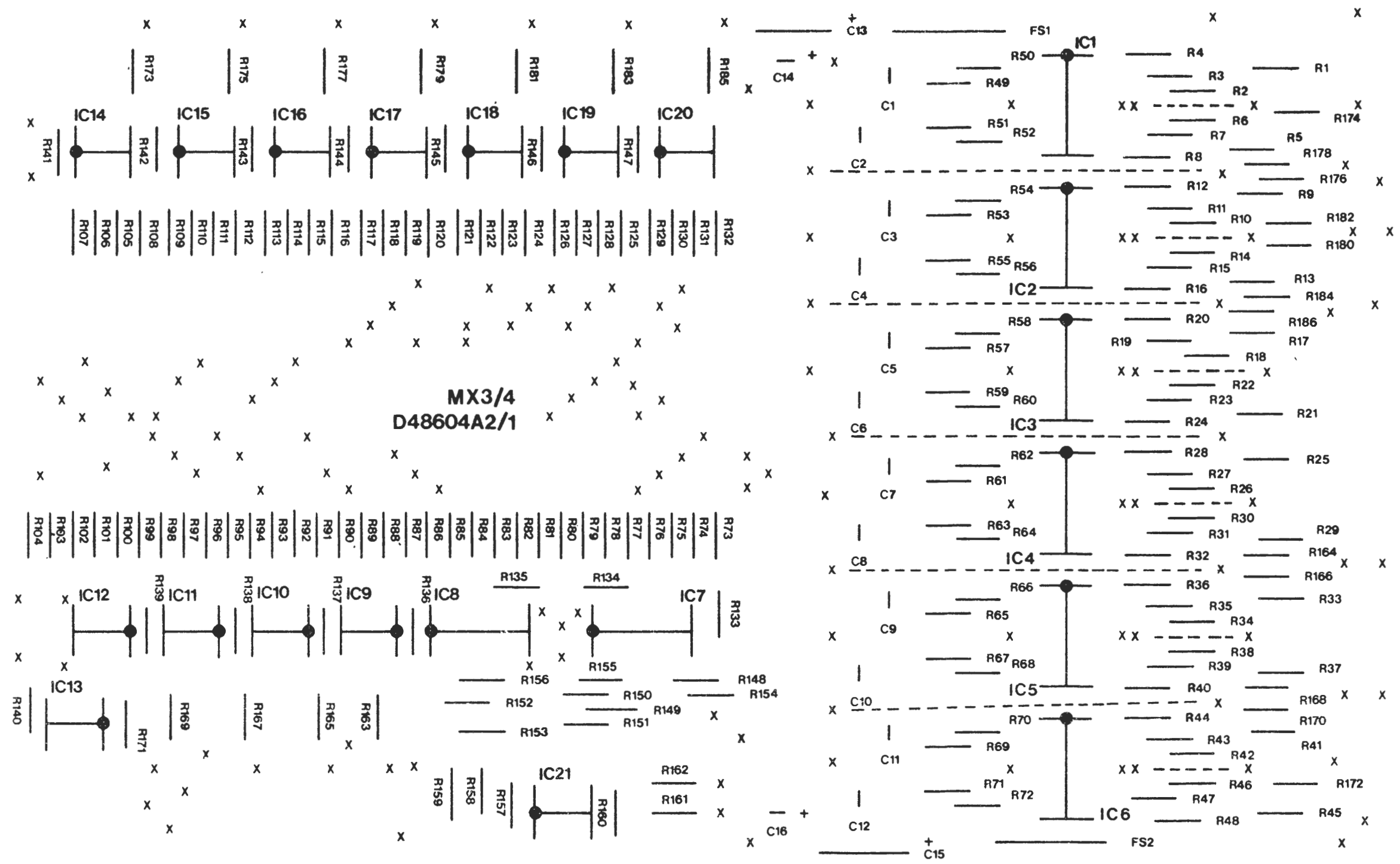
All dimensions in millimetres unless otherwise stated  
Nominal tolerances  
no dimenal plus  
100 dimenal plus

DESIGNS DEPT.  
**D48598 A1**

DATE: 8.1.70

D48604A2

TOP



MINIMUM SIZE TO CUT NEGATIVE SCALE 2:1

SCALE:-

THIRD ANGLE PROJECT JN

ORIGINAL FRAME SIZE 400mm x 574mm

CHANGE 08-6-71

SSS

BBC

DS/A2/1

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Characters and lines to be printed in black.  
 Printed wiring on this side of board is D48603A2  
 Printed wiring on reverse side of board is D48602A2

**MX3/4**

PRINTED BOARD COMPONENT LOCATION

DESIGNS DEPT.

**D48604A2**

All dimensions in millimetres unless otherwise stated  
 Normal tolerances  
 no decimal place - 1 mm unless  
 one decimal place - 0.3 mm otherwise  
 two decimal places - 0.1 mm stated

DRN	
TCD	28
CKD	
APPD	9/2

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