

DESIGNS DEPARTMENT HANDBOOK

No. 3.259(81)

MX3/3 and MX3/3A, Stereo/Mono Converter

C O N T E N T S

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D R A W I N G S

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MX3/3 and MX3/3A, Stereo/Mono Converter

1. INTRODUCTION

The MX3/3 is a 12 channel stereo to mono converter. It is supplied as a 4U BMM unsupported P.C.B. with an edge connector. It was originally used in the EP5M/19 chassis; part of the EP10/18 Radio Continuity Equipment.

The MX3/3A is basically similar to the MX3/3 in all respects except that its gain is 3 dB higher. It is intended to be used as a two into one audio mixer.

2. OPERATION

This unit has fixed gain and has no operational controls.

3. PERFORMANCE

Gain

MX3/3 (one input) -3 dB \pm 0.1 dB

MX3/3A (one input) 0 dB \pm 0.1 dB

Frequency Response 40 Hz to 15 kHz within 0.1 dB relative to response at 1 kHz.

Overload $>$ +18 dBu into high Z with both inputs of any channel terminated with 300 Ω ,

Output Noise The output noise measured with an EP14/1 should be $<$ -80 dB₄.

Harmonic Distortion 40 Hz to 15 kHz at output level of 0 dBu and +16 dBu T.H.D. should be $<$ -60 dB relative to the output.

Crosstalk $>$ 80 dB at 10 kHz between channels provided non-driven inputs are terminated with 300 Ω .

Input Impedance $>$ 40 k Ω T.E.R.

Power Requirements \pm 12.5 volts at 100 mA \pm 10 mA

4. CIRCUIT DESCRIPTION

The MX3/3 is a 12 channel stereo to mono converter supplied as a 4U BMM unsupported P.C.B. As all channels are identical only one channel (16W-16C left, 5W-5C right) will be described in some detail.

Input signals are applied to 1IC1c and b via a T.E.R. (Transmitted Earth Reference) network. This was designed to minimise the pick-up of stray signals by the input cables. This is achieved by a cancelling effect at the input stage necessitating the use of precision resistors for exact signal balance at the inverting and non-inverting inputs.

Following the unity gain first stage (1IC1c and 1IC1b) the two signals are combined in a virtual earth mixer, 1IC1a, to give an output 2.3 dB above the input. The output stage 1IC2 raises the signal level to +3 dB above the input. 1R16 and 1R17 constitute a T.E.R. source impedance of 94 Ω . The fourth IC in a 4741 (1IC1d) package is unused.

5. MAINTENANCE AND ALIGNMENT

Fault units can be repaired by checking D.C. or A.C. conditions and replacing malfunctioning components.

D.C. Conditions

| <u>Location</u> | <u>Reading</u> |
|-------------------|-------------------------|
| 1IC1 pin 4 | +12.5 volts |
| 1IC1 pin 11 | -12.5 volts |
| 1IC1 pins 8, 1, 7 | 0 volts ± 0.1 volts |
| 1IC2 pin 7 | +12.5 volts |
| 1IC2 pin 4 | -12.5 volts |
| 1IC2 pin 6 | 0 volts ± 0.1 volts |

A.C. Conditions

| <u>Location</u> | <u>Reading</u> |
|---------------------------|--------------------|
| Input; left and right CH. | 0 dB, 1 kHz |
| 1IC1c, pin 8 | 0 dB |
| 1IC1b, pin 7 | 0 dB |
| 1IC1a, pin 1 | +2.3 dBu |
| 1IC2, pin 6 | +3 dB ± 0.1 dB |

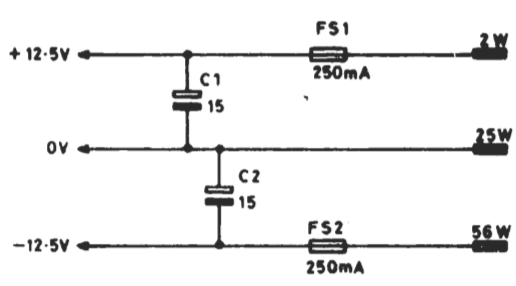
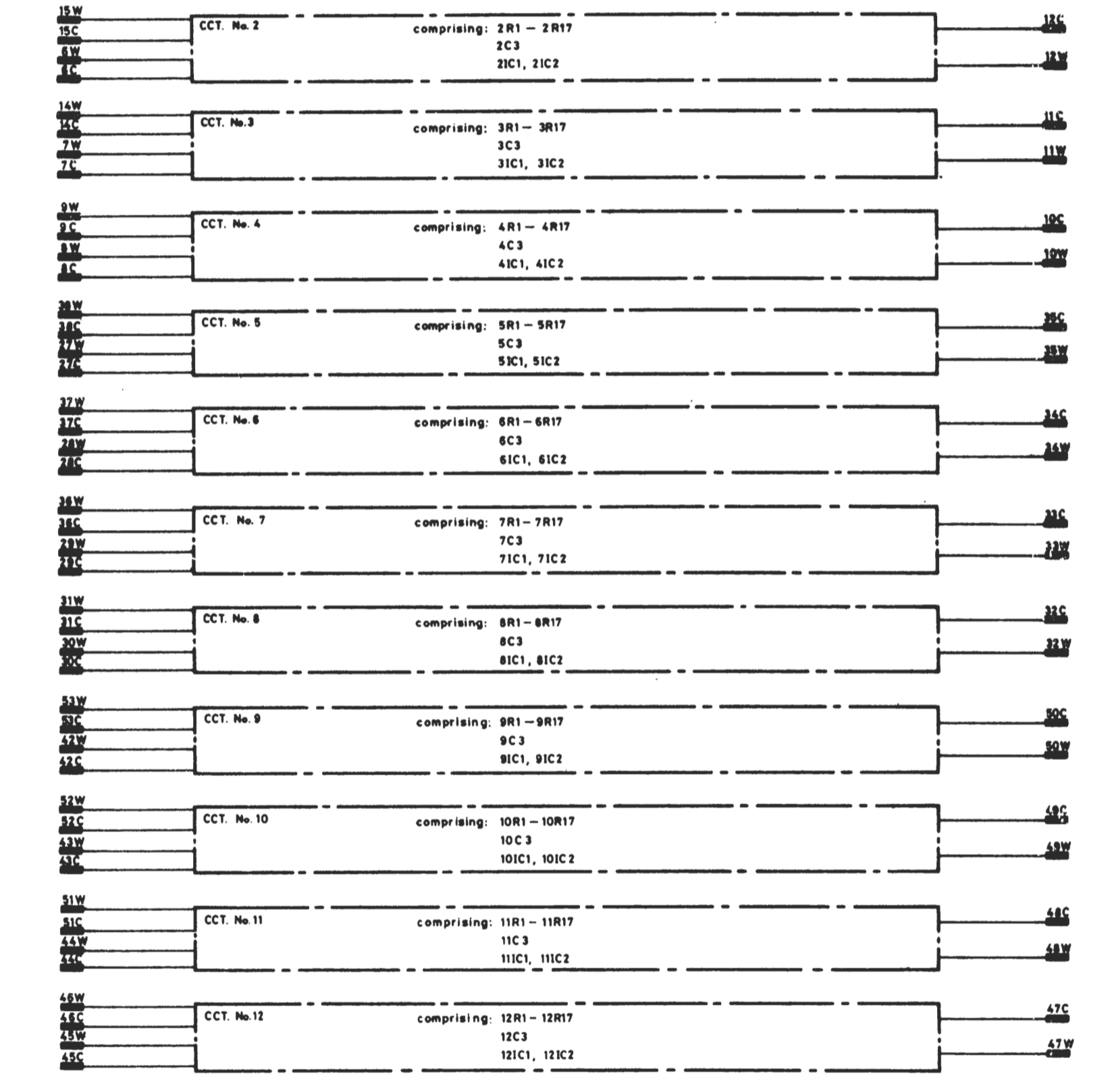
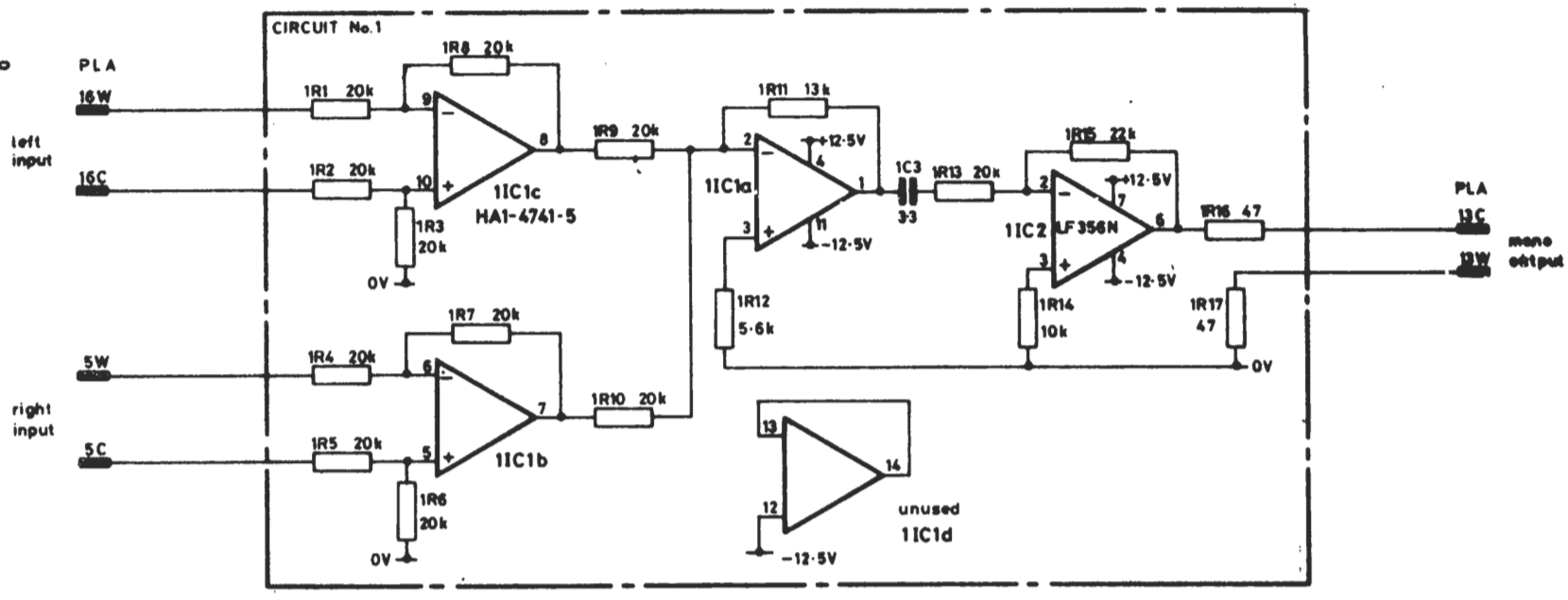
There are no operational controls on the MX3/3.

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SCALE: 0
THIRD ANGLE PROJECTION
ORIGINAL FRAME SIZE 400mm x 574mm

CHANGE
1 27-7-81



MX3/3 STEREO TO MONO CONVERTER CIRCUIT

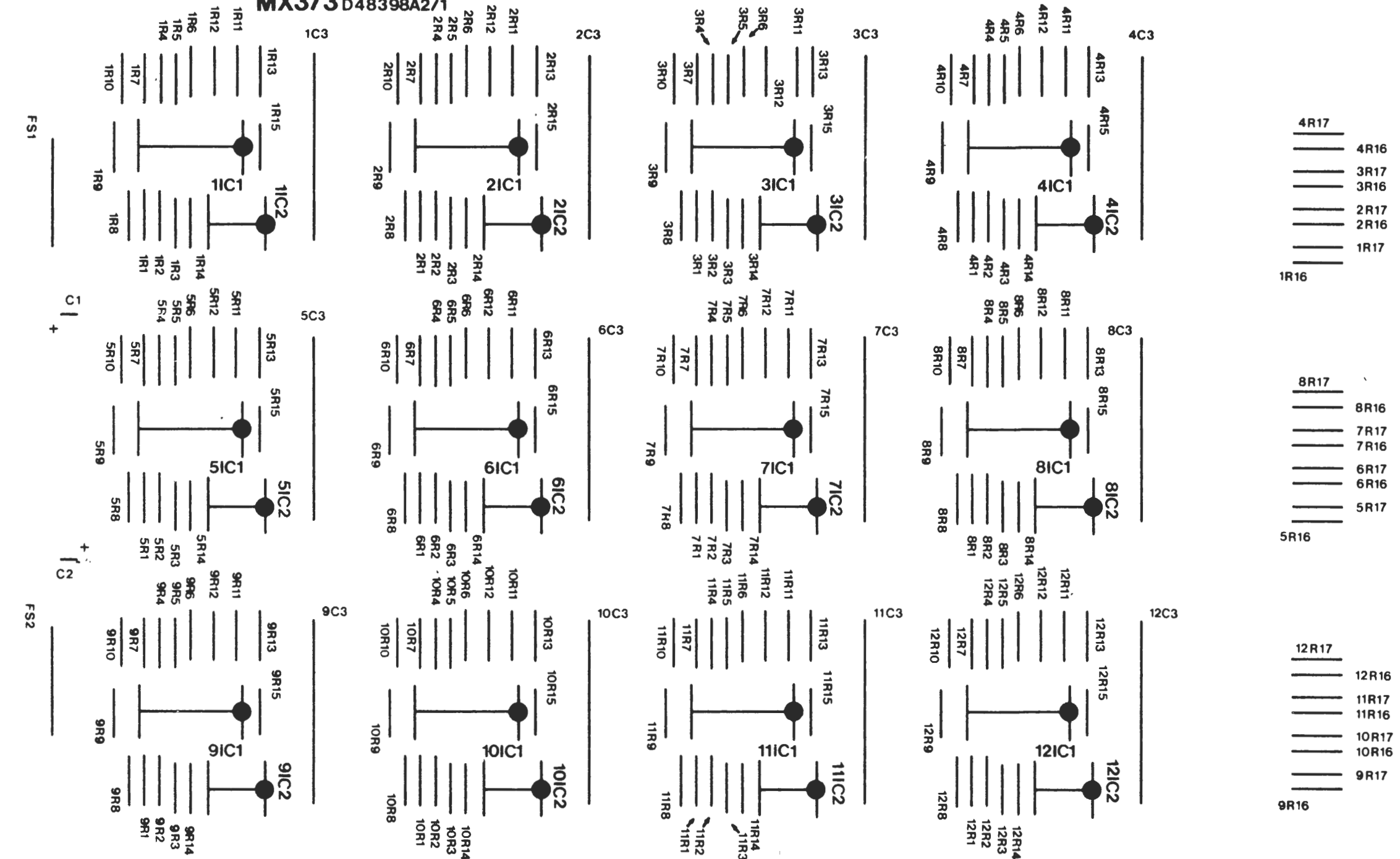
DESIGNS DEPARTMENT

D48390A2

Parts list: D48391A4

TOP

MX3/3 D48398A2/1



- 4R17
- 4R16
- 3R17
- 3R16
- 2R17
- 2R16
- 1R17
- 1R16

- 8R17
- 8R16
- 7R17
- 7R16
- 6R17
- 6R16
- 5R17
- 5R16

- 12R17
- 12R16
- 11R17
- 11R16
- 10R17
- 10R16
- 9R17
- 9R16

FS1

FS2

C1

C2

2V86E87D

MINIMUM SIZE TO CUT NEGATIVE

CHARACTERS AND LINES TO BE PRINTED IN BLACK
 PRINTED WIRING ON REVERSE SIDE OF BOARD IS D48394A1
 PRINTED WIRING ON COMPONENT SIDE OF BOARD IS D48395A1

SCALE 2:1

THIRD ANGLE PROJECTION

ORIGINAL FRAME SIZE
400mm x 574mm

CHANGH
08/11/10
SSI

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DS/A2.1

MX3/3 PRINTED BOARD COMPONENT LOCATION

All dimensions in millimetres unless otherwise stated
 Normal tolerances
 no decimal place ± 1 mm unless
 one decimal place ± 0.2 mm otherwise

| | |
|-----|------|
| DRN | |
| TCD | I.L. |
| CKD | |

DESIGNS DEPARTMENT

D48398A2