

5. MX900 FADER CONTROL INSTALLATION AND CONNECTION

5.1 PHYSICAL COMPATIBILITY

The Fader Control should be mounted under the Mono Master Front Panel in the same manner as the faders.

Physical details of the MX900 Fader Control can be found in Figure 5.1.

5.2 FADER CONTROL CONNECTION

The Fader Control has a 20 way ribbon cable connection to the MX700 Interface, where it is connected to connector J18 on the first ACE252 Digitiser card.

The link should be as short as possible up to a maximum of 4 metres, terminated in a 20 way closed end IDC socket at each end.

The same principles apply to the Fader Control link as to the Fader Links.

Fader Control power is also derived from the link, no separate power connection is required.

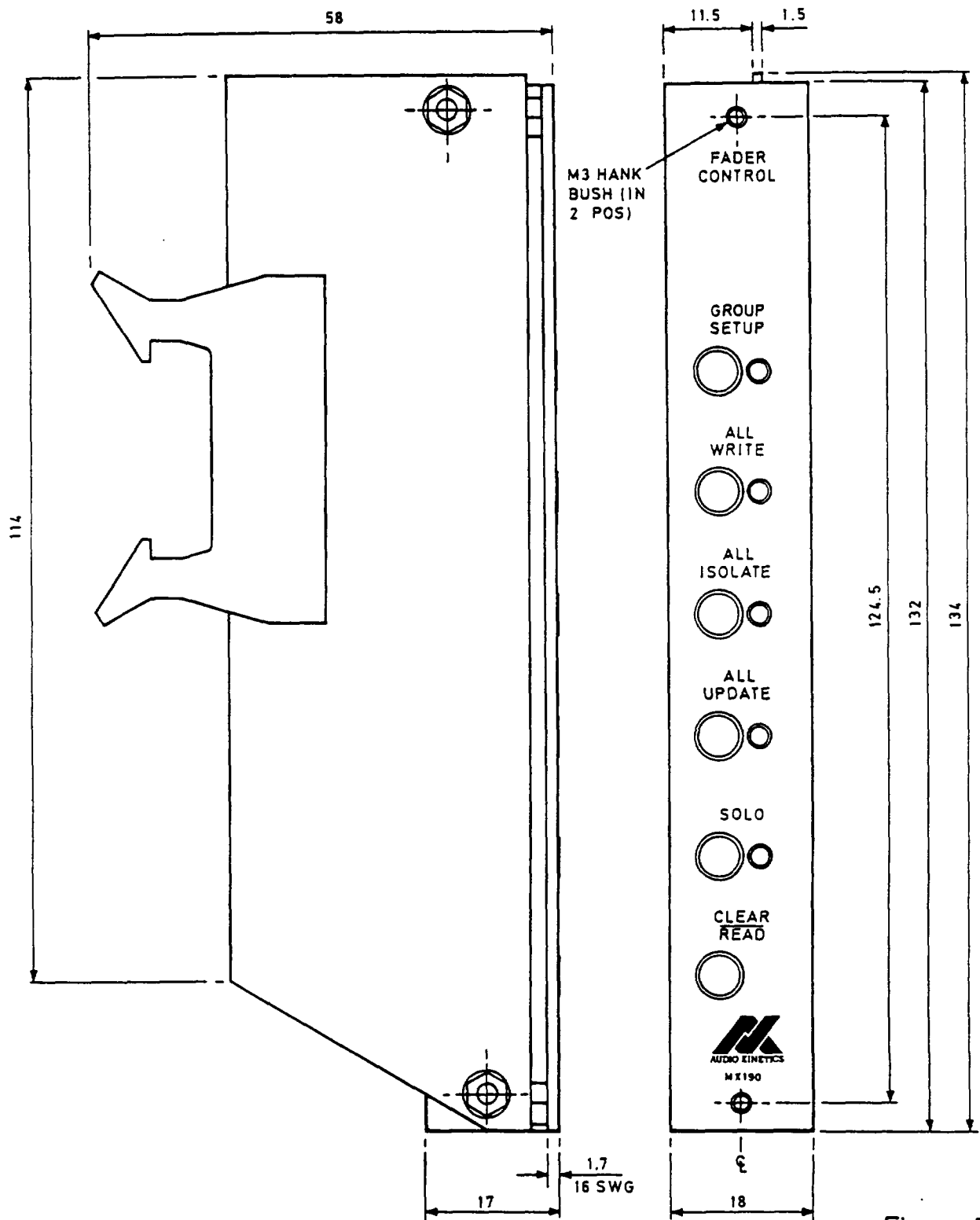


Figure 5.1

MODIFICATION	ISSUE	DATE	DRAWN	CHECKED	DRAWING NO.
	1	3.1.85	JMW		A3/PM/PIM900/5.1



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 Telephone Number 01 933 8118

TITLE
OVERALL PHYSICAL DIMENSIONS MX190 FADER CONTROL

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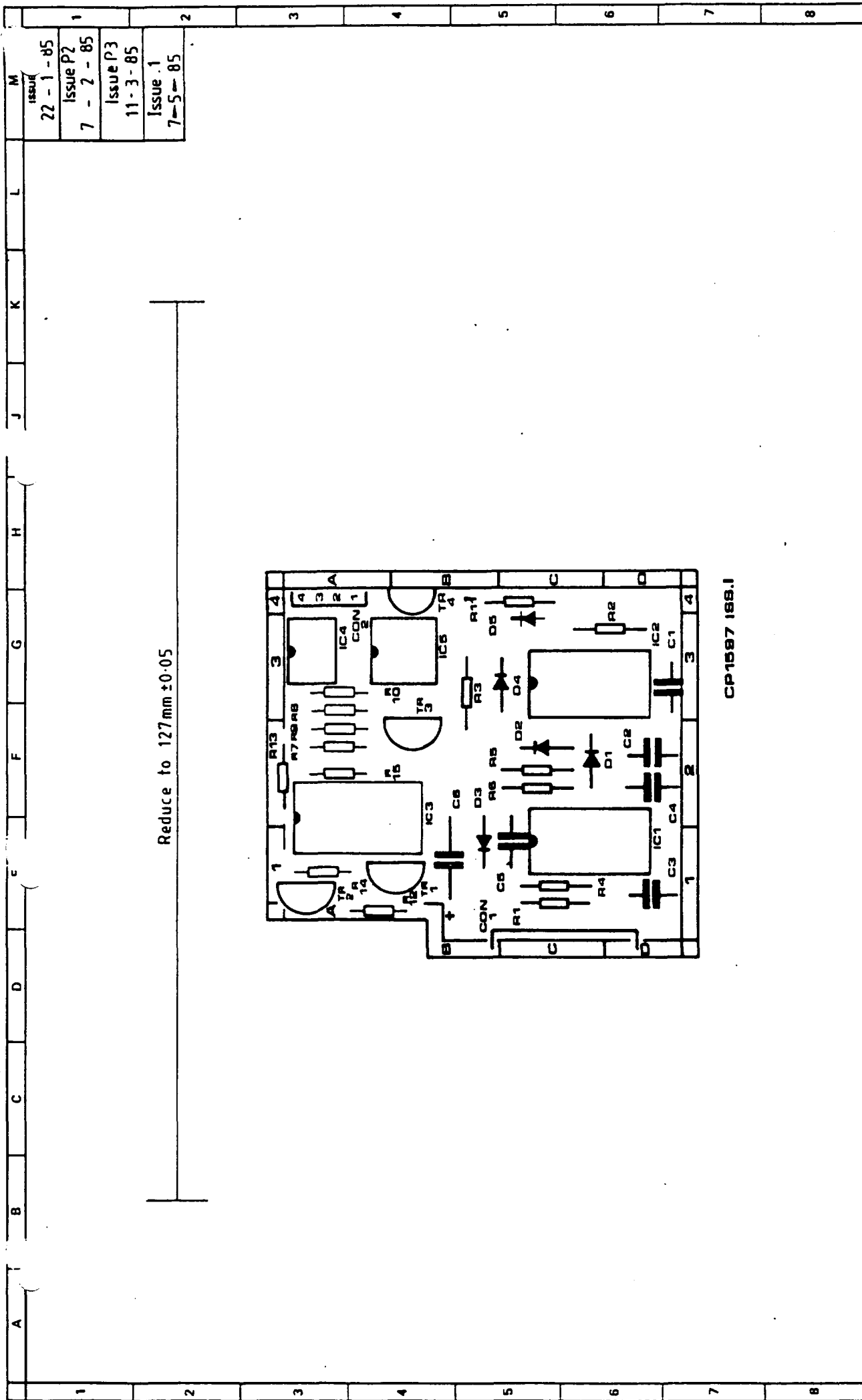
6. EARTHING

6.1 EARTHING

The normal star point for the system is formed by linking ANALOGUE and DIGITAL GROUND on the rear of the MX700.

If there is evidence of RF interference connect the Console's 'Analogue Ground' to the ANALOGUE GROUND connector on the rear of the MX700. The best point for 'Analogue Ground' from the console may have to be found by experiment.

An EARTH CONNECTION KIT (ADM006) is available.

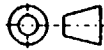


CP1587 185.1

<p>1</p>		<p>2</p>		<p>3</p>		<p>4</p>		<p>5</p>		<p>6</p>		<p>7</p>		<p>8</p>	
<p>M</p>		<p>L</p>		<p>K</p>		<p>J</p>		<p>H</p>		<p>G</p>		<p>F</p>		<p>E</p>	
<p>ISSUE</p>		<p>22 - 1 - 85</p>		<p>Issue P2</p>		<p>7 - 2 - 85</p>		<p>Issue P3</p>		<p>11 - 3 - 85</p>		<p>Issue .1</p>		<p>7 - 5 - 85</p>	
<p>TITLE</p>		<p>AK</p>		<p>AUTO. INTFC.</p>		<p>(COMP. IDENT)</p>		<p>DRN</p>		<p>Mark</p>		<p>MATL</p>		<p>MOLE INDEX</p>	
<p>DRG. No.</p>		<p>CP1597</p>		<p>SOUND CRAFT ELECTRONICS LTD</p>		<p>5-8 GREAT SUTTON STREET</p>		<p>LONDON EC1V 0BK.</p>		<p>TELEPHONE: 01-251-3831/2/3</p>		<p>TELEGRAMS: SOUND CRAFT LON EC1</p>		<p>TELEX: UK. No. 31198. USA. No. Z24408</p>	
<p>SCALE</p>		<p>2:1</p>		<p>FINISH</p>		<p>TRCO</p>		<p>CHKD</p>		<p>IC1</p>		<p>IC2</p>		<p>IC3</p>	
<p>THIRD ANGLE PROJECTION</p>				<p>TOLERANCE</p>		<p>All imperial dimensions ± 0.010</p>		<p>All metric dimensions ± 0.25mm</p>		<p>All angles ± 0.50°</p>		<p>Unless otherwise stated</p>		<p>Reduce to 127mm ± 0.05</p>	

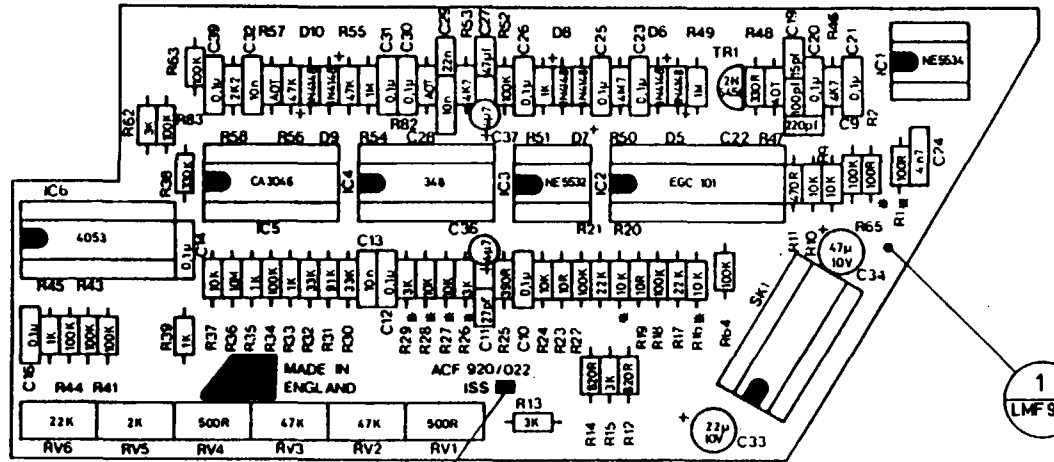
USED ON
MX900

3rd ANGLE PROJECTION



METRIC
IMPERIAL

14A



NOTE
T * DENOTES 1/4W 1% RESISTORS

ISSUE OF DRAWING LIST
TO BE INDELIBLY MARKED

1
LMF920

CERT'D

CHECKED

DRAWN
WDS

MATERIAL REFER TO PARTS LIST	TOLERANCE _____
FINISH _____	SURFACE ROUGHNESS _____
DIMS IN _____	SCALE TWICE SIZE



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TITLE AK FADER AUDIO BOARD PCB ASSEMBLY
DRAWING NUMBER A2 / PM / ACF920/022

AR No	ISSUE	DATE	AR No	ISSUE	DATE	AR No	ISSUE	DATE
	1	17.A.82						

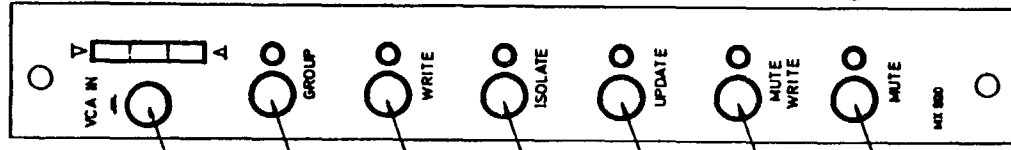
A
2

JSED
ON
X900

3rd ANGLE PROJECTION



LED1 (RED) LED2 (YEL) LED3 (RED) LED4 (GRN) LED5 (RED) LED6 (GRN) LED7 (YEL) LED8 (RED) LED9 (RED)

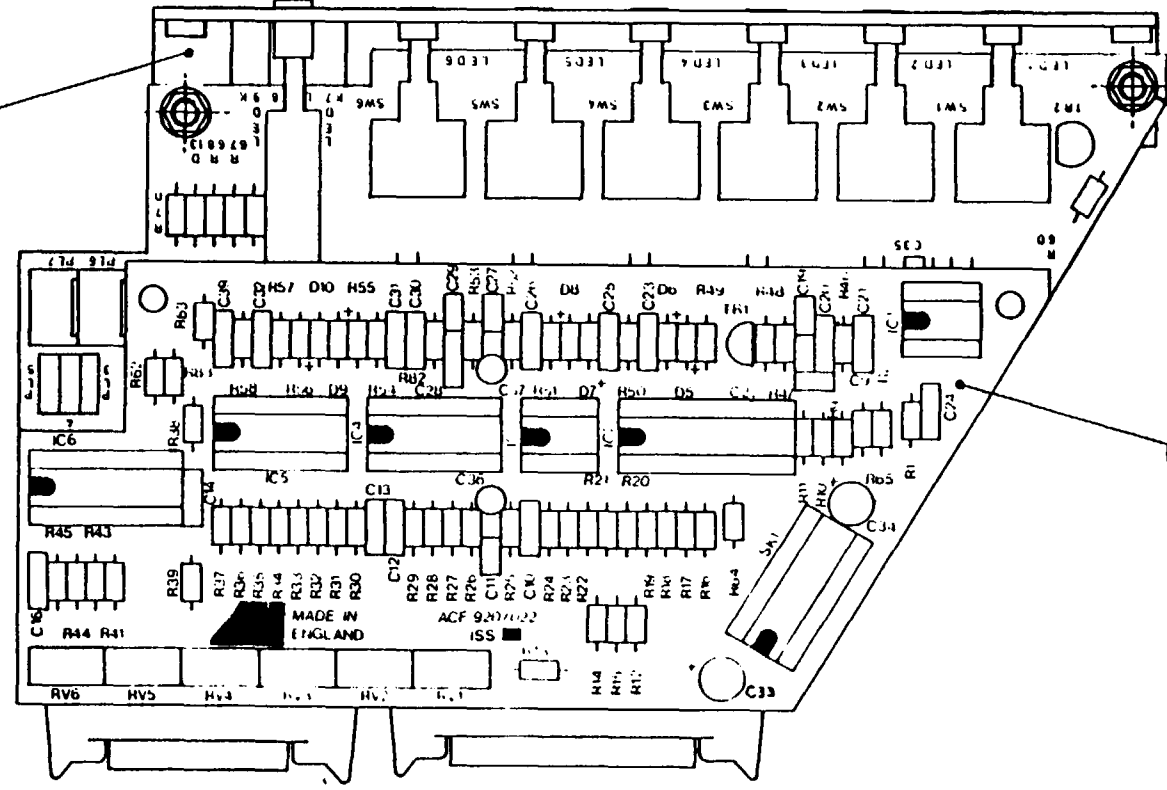


11 BLK 10 GRN 7 RED 9 WHI 8 YEL 7 RED 7 RED

4 NMM900

14 16 18 20

IN 2 POSITIONS



1 ACF900

RTD.
HECKED
AWN
WDS

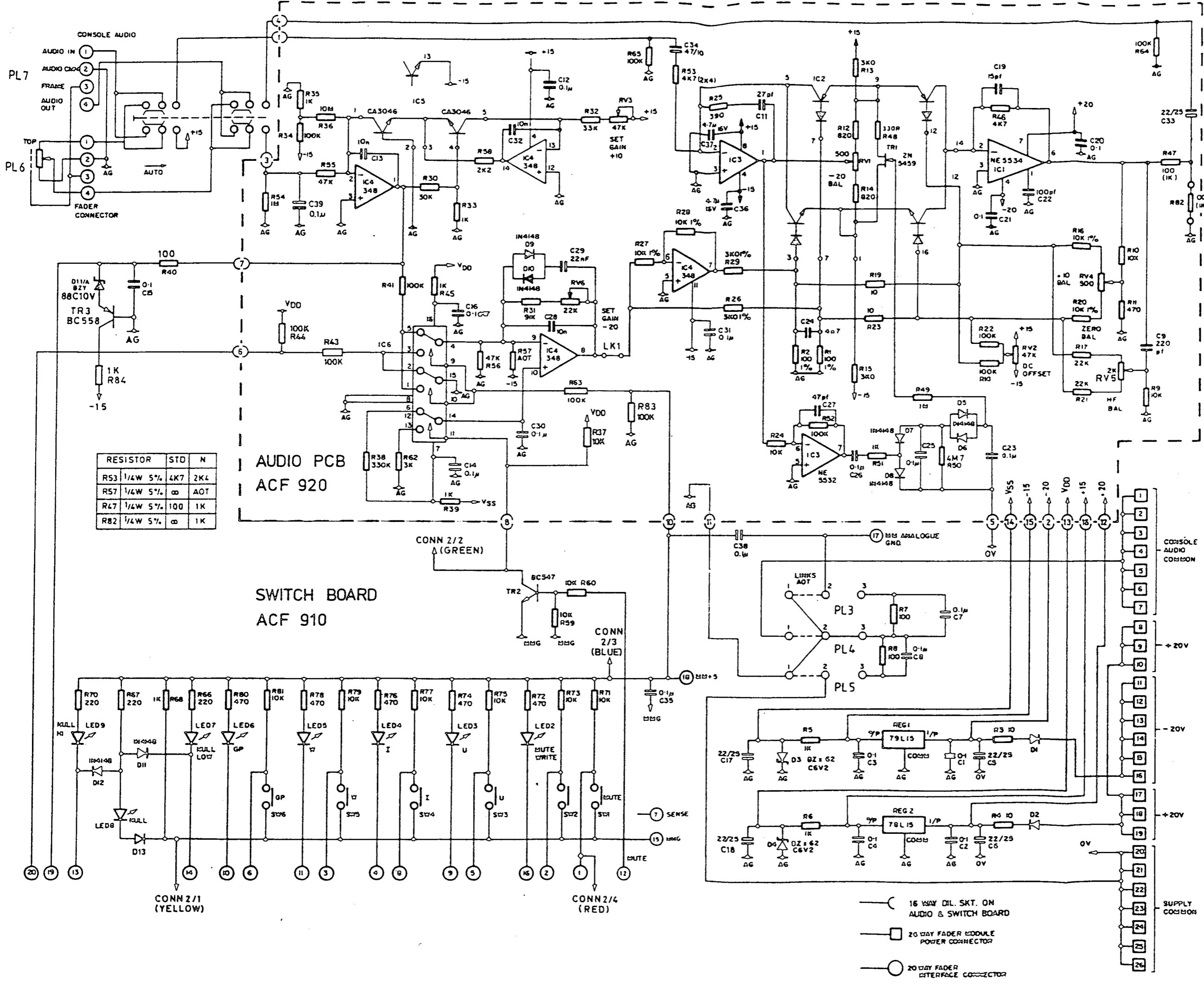
MATERIAL	SEE PARTS LIST	TOLERANCE	
FINISH		SURFACE ROUGHNESS	
DIMS IN		SCALE	TWICE SIZE



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TITLE	AK FADER ASSEMBLY (SC)							
DRAWING NUMBER	A2/PM/MMF 900/022							
ECO No.	ISSUE	DATE	AR. No.	ISSUE	DATE	AR. No.	ISSUE	DATE
M019	1	20 3 85						
		21 6 84						

A
2



RESISTOR	STD	N
R53	1/4W 5% 4K7	2K4
R57	1/4W 5% ∞	AOT
R47	1/4W 5% 100	1K
R82	1/4W 5% ∞	1K

MODIFICATION: AR102 2

ISSUE: 1

DATE: MARCH 84

DRAWN: CHECKED: DRAWING NO: A3/PM/ACF900/001

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TITILE: SOUNDRAFT TS24 FADER CIRCUIT DIAGRAM

- 16 WAY DIL. SKT. ON AUDIO & SWITCH BOARD
- 20 WAY FADER MODULE POWER CONNECTOR
- 20 WAY FADER INTERFACE CONNECTOR

MASTERMIX
SERVICE MANUAL
FOR
MX644 COMPUTER AND CONTROLLER
(INCORPORATING SLIM LINE DISC DRIVE)

DOCUMENTATION RELEASE : 860123

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1. INTRODUCTION

1.1 FOREWORD

It is the purpose of this manual to provide the technical information required to perform fault diagnosis and troubleshooting for the MasterMix MX644 and MasterMix Controller.

1.2 COPYRIGHT

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2. TECHNICAL OVERVIEW

The MX644 Computer is a dual micro processor system handling all time code reading and generation and management of the data flow to and from the disc sub system.

The time code processing is handled by a dedicated M6809 microprocessor utilising a unique adaptive comb filter to give good low level code recovery. Time code is sent to the mastermix interface using an RS422 data link.

The main system is again an M6809 microprocessor with 64K byte or dynamic memory, EPROM, system utilises, a four channel DMA controller and mini floppy disc sub system interface, communications is once again RS422.

3. PARTS SUPPLIED

The MasterMix Automation Computer (AK Part No. MMM010) consists of the following major assemblies :-

- The MasterMix MX644 equipped with Slim Line Disc Drive (AK Part No. AMM010)
- The MasterMix Controller for either Digital I/F (AK Part No. AMM102)
or DC I/F (AK Part No. AMM103)
- The MasterMix Controller Cable (AK Part No. AAM020)
- The MasterMix RS422 Interface Cable (AK Part No. AAM010)

4. INSTALLATION

The MasterMix MX644 is a 19 inch rack mountable box which it is recommended should be placed in a suitable 19 inch rack which is close to the console, since the operator will require access to the disc drive and the switches and displays on the front panel.

IT SHOULD NOT BE MOUNTED ABOVE OTHER EQUIPMENT WHICH GENERATES A LARGE AMOUNT OF HEAT.

The MasterMix Controller should be connected to the MasterMix INTERFACE by means of the cable (AAM020). The Controller normally resides on the console itself.

The RS422 Interface Cable (AAM010) connects the MX644 to the Interface.

5. ALIGNMENT AND ADJUSTMENT

No internal adjustments are normally required to the MX644, the information presented here is for troubleshooting and diagnostic purposes.

5.1 LINKS ON MOTHERBOARD (ACE231)

See the assembly diagram A1/PM/ACE231/022

J1	2-3												
J2	5-6												
J3	1-2												
J4	5-6												
J5	1-2												
J6	1-2												
J7	1-2												
J8	1-2	3-4	5-6										
J14	3-4	7-8	9-10										
J15	1-2												
J17	1-2	3-4	5-6	7-8	9-10	11-12	13-14						

5.2 LINKS ON SYSTEM STATUS CARD (ACE244)

See the assembly diagram A3/PM/ACE244/022

J1 2-3

5.3 LINKS ON FDC CARD (ACE250)

See the assembly diagram A2/PM/ACE250/022

BASF 6118 Disc Drive

J1 1-2
LK1 1-2
LK2 1-2

See the assembly diagram A2/PM/ACE250/022

Canon 221 Disc Drive

J1 1-2
LK1 2-3
LK2 2-3

6. ENGINEERING INFORMATION

MasterMix 644

Motherboard		ACE231
Circuit Diagram	A1/PM/ACE231/001	
Assembly Diagram	A1/PM/ACE231/022	
Time Code Reader/Generator Board		ACE233
Circuit Diagram	A1/PM/ACE233/001	
Assembly Diagram	A1/PM/ACE233/023	
Display Board		ACE249
Circuit Diagram	A3/PM/ACE249/001	
Assembly Diagram	A2/PM/ACE249/022	
Switch Board		ACE248
Circuit Diagram	A3/PM/ACE248/001	
Assembly Diagram	A3/PM/ACE248/022	
System Status Board		ACE244
Circuit Diagram	A2/PM/ACE244/001	
Assembly Diagram	A2/PM/ACE244/022	
Floppy Disc Controller		ACE250
Circuit Diagram	A2/PM/ACE250/001	
Assembly Diagram	A2/PM/ACE250/022	
Slim Line Disc Drive (Canon 221)		MDA180
Jumper and Link settings		
Schematic Diagram		
Power Supply	A3/PM/ACE010/001	ACE010
Circuit Diagram		
Mastermix Interface MX644 RS422 communications cable		AAM010
Cable diagram	A3/PM/AAM010/011	

MASTERMIX CONTROLLER

Controller PCB		ACE268
Circuit Diagram	A1/PM/ACE268/001	
Assembly Diagram	A2/PM/ACE268/022	
Controller Assembly		EAM010
Button Caps (Controller)	A4/PM/EAM011/029	
Button Caps (Digital I/F)	A4/PM/EAM012/029	
Button Caps (DC I/F)	A4/PM/EAM013/029	
Controller Cable		AAM020
Cable Diagram	A3/PM/AAM020/011	

EP2501 REV 5 BILL OF MATERIALS

Circuit Reference	Part Number	Description	Quantity
	01-023	PCB 160x100mm Single Sided	1
J1,J2	04-504	Terminal Pins	12
J2	04-008	Link for 120/240 S/A	1
FS1	02-106	Fuse 1A 20mm Anti-surge	1
FS1	02-002	Fuse Holder	1
TH1	10-002	Thermistor	1
T1	28-401	Power Transformer S/A	1
T2	28-502	Feedback Transformer S/A	1
T3	28-612	RFI Filter	1
L1,L2	28-701	Output Inductor S/A	2
BRI	21-501	Bridge Rectifier 4A 600V	1
A1	07-301	Shunt Regulator	1
A2	07-201	-12V 1A Regulator	1
H2	05-005	Heatsink A2	1
CR1,CR2	09-003	SCR 1A 30V BRY55	2
Q1	08-003	Transistor 800V 3A	1
	05-001	Heatsinks (Q1,D5,D6)	3
	03-901	Tie Wrap (T3)	1
	03-001	Screw Pos Hd, M3x6mm	3
	03-002	Screw Pos Hd, M3x10mm	1
	03-201	Nut, M3	4
	03-401	Washer, Shakeproof, M3	4
FS1	02-003	Fuse Cover	1
R1,R2	12-125	Resistor 120k ohms 1/4W MF	2
R3	16-006	Resistor 22k ohms 3W WW	1
R4	13-099	Resistor 0.82 ohms 1/2W	1
R7	12-222	Resistor 220 ohms 1/4W MF	1
R9,R13	12-102	Resistor 100 ohms 1/4W MF	2
R10,R12	12-224	Resistor 22K ohms 1/4W M	2
R11	12-473	Resistor 4k7 ohms 1/4W M	1
R6	12-122	Resistor 120 ohms 1/4W M	1
R14	16-011	Resistor 220 ohms 4W 155-453	1
	03-904	Support for R14 543-642	1
VR1	31-003	Pot 5k lin	1
	03-299	Insulating Beads fitted to R3	2
D1	20-303	BYN96E 1A 1000V Diode	1
	06-004	Buff (Tie on label)	1
D2	20-002	Diode 50V 1A	1
D3,D8	22-011	Zener Diode 5.6V	2
D4,D10	20-201	Diode Signal	2
D5	21-001	Diode Dual 50V 10A	1
D6	21-100	Diode Dual 200V 5A	1
D7	20-302	Diode 200V 3A	1
D9	22-005	Zener 3V3 400mW	1
D11	20-301	Diode 1000V 1A	1
C1,C2	17-901	Capacitor 100uF 250V AER	2
C3,C17	19-005	Capacitor 0.1uF250V (X)	2
C4,C5	19-004	Capacitor 2200pF 250V (Y)	2
C6	17-102	Capacitor 100uF 10V AER	1
C6	19-001	Capacitor 0.047uF 400V	1

C8,C9	17-301	Capacitor 2200uF 25V AER	2
C10,C11,C12	17-201	Capacitor 1000uF 16V AER	3
C13	17-501	Capacitor 1uF 16V AER	1
C14	19-009	Capacitor 0.001uF 1000V	1
C15	17-401	Capacitor 4.7uF 35V AER	1
C16	19-013	0.47 microF 63V	1

APPENDIX A ERROR MESSAGES FOR MX644

The Table below shows the meaning of the error codes output by MasterMix.

The error codes are output in two ways:

- As a two digit code displayed on the front panel of the MX644.
This is the code in the "Code Displayed on MX644" column.
- As an up to three digit code output as an ASCII coded message on serial port B of the MX644.
This is the code in the "Code Displayed on Serial Port" column.

<u>Code Displayed on Serial Port</u>	<u>Code Displayed on MX644</u>	<u>Meaning</u>
1	51	UNCONDITIONAL ABORT
2	52	KEYBOARD ABORT
3	53	KEYBOARD INTERRUPT
10	4	Unrecognized Symbol
11	4	Excessive Verbage
2	4	Illegal Statement Construction
13	4	I-code Overflow
14	4	Illegal Channel Reference
15	4	Illegal Mode (Read/Write/Update)
16	4	Illegal Number
17	4	Illegal Prefix
18	4	Illegal Operand
19	4	Illegal Operator
20	4	Illegal Record Field Name
21	4	Illegal Dimension
22	4	Illegal Literal
23	4	Illegal Relational
24	4	Illegal Type Suffix
25	4	Too Large Dimension
26	4	Too Large Line Number
27	4	Missing Assignment Statement
28	4	Missing Path Number
29	4	Missing Comma
30	4	Missing Dimension
31	4	Missing DO Statement
32	4	Memory Full
33	4	Missing GOTO
34	4	Missing Left Parenthesis
35	4	Missing Line Reference
36	4	Missing Operand
37	4	Missing Right Parenthesis
38	4	Missing THEN statement
39	4	Missing TO
40	4	Missing Variable Reference

<u>Code Displayed on Serial Port</u>	<u>Code Displayed on MX644</u>	<u>Meaning</u>
41	4	No Ending Quote
42	4	Too Many Subscripts
43	4	Unknown Procedure
44	4	Multiply Defined Procedure
45	4	Divide by Zero
46	4	Operand Type Mismatch
47	4	String Stack Overflow
48	4	Unimplemented Routine
49	4	Undefined Variable
50	4	Floating Overflow
51	4	Line with Compiler Error
52	4	Value out of Range for
53	4	Subroutine Stack Overflow
54	4	Subroutine Stack Underflow
55	4	Subscript out of Range
56	4	Parameter Error
57	4	System Stack Overflow
58	4	I/O Type Mismatch
59	4	I/O Numeric Input Format
60	4	I/O Conversion: Number
61	4	Illegal Input Format
62	4	I/O Format Repeat Error
63	4	I/O Format Syntax Error
64	4	Illegal Path Number
65	4	Wrong Number of Subscripts
66	4	Non-Record-Type Operand
67	4	Illegal Argument
68	4	Illegal Control Structure
69	4	Unmatched Control Structure
70	4	Illegal FOR Variable
71	4	Illegal Expression Type
72	4	Illegal Declarative Statement
73	4	Array Size Overflow
74	4	Undefined Line Number
75	4	Multiply-Defined Line Number
76	4	Multiply-Defined Variable
77	4	Illegal Input Variable
78	4	Seek Out of Range
79	4	Missing Data Statement

<u>Code Displayed on Serial Port</u>	<u>Code Displayed on MX644</u>	<u>Meaning</u>
200	00	PATH TABLE FULL
201	01	ILLEGAL PATH NUMBER
202	02	INTERRUPT POLLING TABLE FULL
203	03	ILLEGAL DEVICE
204	04	DEVICE TABLE FULL
205	05	ILLEGAL MODULE HEADER
206	06	MODULE DIRECTORY FULL
207	07	MEMORY FULL
208	08	ILLEGAL SERVICE REQUEST
209	09	MODULE BUSY
210	10	BOUNDARY ERROR
211	11	END OF FILE (See Note 1 Below)
212	12	NOT YOUR MEMORY
213	13	NON EXISTING SEGMENT
214	14	NO PERMISSION
215	15	BAD PATH NAME
216	16	PATH NAME NOT FOUND
217	17	SEGMENT LIST FULL
218	18	FILE ALREADY EXISTS
219	19	ILLEGAL BLOCK ADDRESS
220	20	ILLEGAL BLOCK SIZE
221	21	MODULE NOT FOUND
222	22	SECTOR OUT OF RANGE
223	23	SUICIDE ATTEMPT
224	24	ILLEGAL PROCESS NUMBER
225	25	ILLEGAL SIGNAL CODE
226	26	NO CHILDREN
227	27	ILLEGAL SWI CODE
228	28	KEYBOARD ABORT
229	29	PROCESS TABLE FULL
230	30	ILLEGAL PARAMETER AREA
231	31	BACKTRACK ERROR
232	32	INCORRECT CRC
233	33	SIGNAL ERROR
234	34	SIGNAL ERROR
235	35	BAD NAME
236	36	BAD HEADER
237	37	RAM FULL
238	38	BAD PROCESS ID
239	39	NO TASK NUMBER AVAILABLE
240	40	UNIT ERROR
241	41	SECTOR ERROR
242	42	WRITE PROTECT
243	43	CRC ERROR
244	44	READ ERROR
245	45	WRITE ERROR
246	46	NOT READY
247	47	SEEK ERROR

<u>Code Displayed on Serial Port</u>	<u>Code Displayed on MX644</u>	<u>Meaning</u>
248	48	MEDIA FULL
249	49	WRONG TYPE
250	50	DEVICE BUSY (See Note 2 below)
100	54	SEGMENT SIZE ERROR
101	55	INVALID PACKET LEADER (FROM DISC)
102	56	BAD FORMAT TIMECODE (FROM I/F)
103	57	BUFFER OVERFLOW (WRITE DATA)
104	58	BUFFER OVERFLOW (READ DATA)
105	59	READ PACKET FAULT (READ)
106	60	NO DATA IN MEMORY (COPY SOURCE)
107	61	MEMORY SAFE (COPY DESTINATION)
108	62	EDIT KERNAL ECB HAS NO DEFINED I/P FILES
109	63	EDIT KERNAL LEADER BYTE ERROR
110	64	EDIT KERNAL MODULE NOT FOUND

Note 1 : CODE 11 is also used during Formatting of Floppy Discs to indicate completion of Formatting.

Note 2 : CODE 50 is also used during Formatting of Floppy Discs to indicate that the Formatting Disc should be removed.

Note 3 : Code 65 no data in selected READ MEMORY.