

USED ON

MODEL	SECTION	QUAN.

ML-CFA-1

A-K

LIST NO.

REV.

FREQUENCY SHIFT CONVERTER
(TITLE)

LIST SECTIONS

1. ELECTRICAL / MECHANICAL

2. HARDWARE

3. RAW MATERIALS

4. SUPPORTING DRAWINGS

5. SPECIFICATIONS

6. LOOSE ITEMS SH. 14

7. PARTS PECULIAR SH. 14 WHEN USED WITH DDR-6

TYPED NOVEMBER 24, 1959

CHECKED _____

APPROVED _____

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.																LIST NO. ML-CFA-1		
	QUANTITY REQ.	L P N	PART NO.	REV	DWG SIZE	ISSUE																REF	SYMBOLS
						S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH		
						AJAKI																	
						ELECTRICAL COMPONENTS & MECHANICAL PARTS																	
P	1		BI-101-44	C	1	Lamp, Incandescent																	I1
P	1		BX-102-1	F	1	Can																	
P	1		CA-103-72 (see pg. 14)	B	1	Cable, Power (See Page 14)																	
P	1		CI-105	A	1	Core																A-359	
P	2		CM35C113J	A	1	Capacitor, Fixed: Silvered mica																	C11,14
P	2		CM20B102K	C	2	Capacitor, Fixed: mica																	C27,30
P	2		CM20B201K	C	2	Capacitor, Fixed: mica																	C28,29
P	2		CM30D242J	C	2	Capacitor, Fixed, Mica																	C13,16
P	6		CN-100-3	B	1	Capacitor, Fixed: paper																	C3,4,6,7,38,8
P	4		CN-100-9	B	1	Capacitor, Fixed; paper dielectric																	C17,18,24,26
P	1		CN-100-10	B	1	Capacitor, Fixed: paper																	C19
P	2		CN-100-13	B	1	Capacitor, Fixed: paper																	C25,39
P	2		CN-100-17	B	1	Capacitor, Fixed: paper																	C20,32
P	3		CN-100-21	B	1	Capacitor, Fixed: paper																	C5,23,40
P	5		CP41B1FF405K	B	2	Capacitor, Fixed: paper dielectric																	C33,34,35,36,37
P	1		CP69B1EF104K		2	Capacitor, Fixed: paper dielectric																	C21
P	2		CP69B4EF504V		2	Capacitor, Fixed: paper dielectric																	C1,2; C9-C10
P	1		FH-100-2	A	1	Holder, Fuse																	XF1
P	1		FU-100-2		1	Fuse, Cartridge																	F1
P	1		HB-101-2	D	1	Plug Button																	

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.													LIST NO.					
	QUANTITY REQ.	L P Z	PART NO.	REV	ISSUE	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	SHEET	OF
					DWG	DESCRIPTION													REF	SYMBOLS			
					SIZE																		
						ELECTRICAL COMPONENTS & MECHANICAL PARTS																	
	1		IM-108		2	Insulation, Bottom Cover													(1) A-393				
	1		IM-150		2	Terminal Board #9 Insulation																	
	2		IM-151		1	" " #6 Insulation																	
	1		IM-152		1	" " #8 "																	
	1		IM-153		1	" " #7 "																	
	2		IM-154		1	" " #5 "																	
P	1		JJ-100		1	Connector, Assembly														P1			
P	1		MP-100-4		2	Knob																	
P	1		MP-102-2		1	Knob																	
P	2		MS-154-1		1	Straddle Plate																	
	1		MS-265		2	Cover, Top																	
	1		MS-266 (use A-393)		4	Cover, Bottom (No Dwg.)																	
	1		MS-267		1	Shim, Sub. Chassis																	
	1		MS-268		1	Cross Brace																	
	1		MS-269 (use A-411)		1	Bracket, Rear Cond. (No Dwg.)													LD-415				
	1		MS-270 (use A-412)		1	" Front " " "													LD-417				
	1		MS-271		1	Sub Chassis													LD-416				
	2		MS-274		1	Bracket, Terminal Board																	
	1		MS-275		1	" Tube (use for lettering)													LD-434				
	2		MS-276		2	Cover, Sides																	
P	1		MS-277		4	Panel, Front													LD-143				
	1		MS-278 (use A-406)		8	Chassis, Center (No Dwg.)													LD-411				
	1		MS-279 (use A-407)		8	" Left (No Dwg.)													LD-414				
	1		MS-280		8	" Right													LD-412				
	1		MS-281 (use A-406)		4	" Front (No Dwg.)													LD-				

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.													LIST NO.			
	QUANTITY REQ.	L P N	PART NO.	REV	DWG	ISSUE													SHEET	OF	SHEETS
					SIZE	AJ	AK	S	T	U	V	W	X	Y	Z	AA	AB	AC			
ELECTRICAL COMPONENTS & MECHANICAL PARTS																					
	1		MS-282 (use A-409)		4	Chassis, Rear													LD-413		
	1		MS-283		1	Bracket, Pot													LD-432		
	1		MS-284		1	Bracket, Mounting													LD-433		
P	1		NP-103-3		4	Name Plate															
P	1		NP-134		1	Name Plate, Patent															
	1		PX-146 (use A-394)		1	Terminal Board #8 (No Dwg.)															
	2		PX-147 (use A-395)		1	" " #6 "															
	2		PX-148 (use A-396)		1	" " #3 "															
	1		PX-151 (use A-400)		1	" " #2 "															
	1		PX-152 (use A-401)		1	" " #1 "															
	2		PX-153 (use A-402)		1	" " #5 "															
	1		PX-154 (use A-403)		1	" " #7 "															
P	1		PX-337-9		1	Insulation, Terminal Strip															
P	1		RA75ASA252AK25	A	2	Resistor, Variable													R77		
P	4		RC20GF102J	A	2	Resistor, Fixed													R14,28,94,95		
P	3		RC20GF102K	A	2	" "													R11,26,52		
P	5		RC20GF103K	A	2	" "													R8,22,40,87,89,89		
P	3		RC20GF104K	A	2	" "													R7,23,85		
P	6		RC20GF105K	A	2	" "													R2,18,53,71,72,73		
P	3		RC20GF106K	A	2	" "													R38,41,83		
	1		RC20GF153K	A	2	Resisto "													R46		

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

MATERIAL LIST

MODEL CFA-1

PROJ. NO.

LIST NO. ML-CFA-1

ISSUE

P Q R S T U V W X Y Z AA AB AC AD AE

SHEET 4 OF 14 SHEETS

PURCHASED ITEM

QUANTITY REQ.

P N L

PART NO.

REV

DWG SIZE

AF AG AH AJ AK

DESCRIPTION

REF

SYMBOLS

ELECTRICAL COMPONENTS & MECHANICAL PARTS

P	3	RC20GF222K	A	2	Resistor, Fixed		
P	1	RC20GF223K	A	2	" "		R4, 20, 91
P	11	RC20GF224K	A	2	" "		R51
P	7	RC20GF225K	A	2	" "		R9, 10, 24, 25, 64, 65, 78, 79, 92, 93, 61
P	1	RC20GF275K	A	2	" "		R33, 47, 58, 66, 67, 70, 84
P	1	RC20GF303K	A	2	" "		R48
P	2	RC20GF333J	A	2	" "		R86
P	1	RC20GF395K	A	2	" "		R13, 29
P	1	RC20GF473K	A	2	" "		R60
P	14	RC20GF474K	A	2	" "		R90
P	1	RC20GF475K	A	2	" "		R1, 3, 5, 6, 16, 17, 19, 21, 36, 42, 44, 49, 62, 75
P	2	RC20GF683J	A	2	" "		R88
							R15, 30
P	1	RC32GF224K	A	2	" "		R63
P	2	RC32GF392K	A	2	" "		R12, 27
P	2	RC32GF823K	A	2	" "		R43, 50
P	1	RC42GF102K	A	2	" "		R80
P	1	RC42GF223K	A	2	" "		R57
P	1	RC42GF273K	A	2	" "		R56
P	1	RC42GF563K	A	2	" "		R55
P	2	RW-109-30	E	1	" "		R81, 82
P	1	RV4NAYSH104AYY	C	2	Resistor, Variable		R32
P	4	RV4NAYSA105AYY	C	2	" "		R45, 68, 69, 74
P	1	RV4NAYSA504AYY	C	2	" "		R76
P	1	RV4LAYS504A	C	2	" " locking type		R59

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.	LIST NO.	
	QUANTITY REQ.	P L	PART NO.	ISSUE	DWG	SHEET	
				REV			SIZE
ELECTRICAL COMPONENTS & MECHANICAL PARTS							
P	2		ST22K	B	2	Switch, Toggle	S1,3
P	3		ST22N	B	2	" "	S2,4,5
P	1		SW-112		1	Switch, Rotary	S6
P	1		TF-104		2	Transformer	T2
P	1		TF-106	F	2	Transformer	T1
P	2		TF-112	A	1	"	T3,4
P	2		TF-115	D	1	"	T5,6
P	1		TF-5000		2	Reactor, Filter Choke	L1
P	1		TF-5002	A	1	Reactor, Fixed	L6
P	4		TF-5004 (ML-A-413)	D	1	Reactor, Fixed (also ML-A-413)	L2,3,4,5
P	1		TM-100-9	D	1	Board, Terminal	E1
P	1		TM-100-9		2	Terminal Strip	For TM-100-9
P	2		TS165P01	A	2	Socket, Tube:	XV14,15
P	16		TS102P01		1	Socket, Tube:	XV1,2,4,5,6,7,8,9, 10,12,16,17,18,19, 20,22
P	3		TS103P01	C	2	Socket, Tube:	XV3,11,13
P	1		TS-106-1	A	1	Light, Indicator	XI1
P	1		TS-110-1		2	Shield, C.R. Tube	
P	1		TS-110-2		2	Shield, Mu-Metal (Bezel)	
P	1		TS-112		1	Socket, Tube:	XV21

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.	LIST NO.	
	QUANTITY REQ.	P/N	PART NO.	ISSUE	REV	SHEET	
				CFA-1		ML-CFA-1	
				S T U V W X Y Z AA AB AC AD AE AF AG AH		6 OF 14 SHEETS	
				DWG SIZE	DESCRIPTION	REF	SYMBOLS
				AJ AK			
					<u>TUBES</u>		
P	1		0A2		Tube, Electron		V18
P	3		0B2		Tube, Electron		V17, 20, 19
P	1		5Y3GT		Tube, Electron		V15
P	4		6AL5		" "		V6, 7, 8, 22
P	4		6AU6A		" "		V1, 4, 9, 10
P	3		6J6		" "		V2, 5, 12
P	1		6X4		" "		V16
P	1		6Y6G		" "		V14
P	3		12AU7A		" "		V3, 11, 13
P	1		2BP1		" , Cathode Ray		V21

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.													LIST NO.			
	QUANTITY REQ.	P N L	PART NO.	REV	ISSUE	S T U V W X Y Z A A A B A C A D A E A F A G A H													SHEET	OF	SHEETS
					DWG SIZE	DESCRIPTION	REF	SYMBOLS													
					AJ AK																
						<u>HARDWARE</u>															
P	4		SCBP0440BN8	C	1	Screw, Machine															
P	38		SCBP0632BN4	C	1	" "															
P	26		SCBP0632BN5	C	1	" "															
P	34		SCBP0632BN6	C	1	" "															
P	10		SCBP0832BN6	C	1	" "															
P	4		SCFP0440BN4	C	1	" "															
P	6		SCFP0632BN5	C	1	" "															
P	2		SCFP0632BN6	C	1	" "															
P	12		SCFP0832BN8	C	1	" "															
P	40		SCRPO440BN4	C	1	" "															
P	4		SFBO256SN3	A	2	" Thread Cutting															
P	1		TE-102-2		1	Terminal, turret															
P	4		TE-104-2		1	Lug, Solder															
P	173		TE-105-4	A	1	Lug, Terminal (do not purch. if term. bds. are purch.)															
P	20		TE-108-1		1	Stand Off										(4) MS-279					
																(16) MS-278					
P	12		TE-109-3		1	Lug, Terminal															
	2		TE-108-6			Standoff, Rivet Type										(2) MS-278					
P	4		TS-102-U01		1	Shield, Tube															
P	7		TS-102-U02		1	" "															

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.	LIST NO.
	QUANTITY REQ.	P N L	PART NO.	ISSUE	REV	SHEET
				SIZE	DESCRIPTION	REF
				AJ AK		
					<u>HARDWARE</u>	
	5		TS-102-U03	1	Shield, Tube	
	3		TS-103-U02	2	Shield, Tube	
	1		TS-110-1		Shield, C.S. Tube	

ML-CFA-1
OF 14 SHEETS

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

**MATERIAL LIST /
NUMERICAL PARTS LIST**

REV. AE AF AG AH AJ AK

MODEL: ML-CFA-1

SHEET 10 OF 14

PART NO.	DESCRIPTION	ITEM LOCATION			QTY. PER UNIT	REFERENCE SYMBOLS	REMARKS
		USED ON ASSEMBLY	USED TO MOUNT	QTY. PER USED TO MOUNT			
PX-104-X-.022	Insulation, Sleeving			6'			
PX-104-X-.034	" "			10'			
MWC20(7)U1	Wire Insulated			4'1"			
MWC20(7)U2	" "			2'5"			
MWC20(7)U4	" "			4'3"			
MWC20(7)U6	" "			1'4"			
MWC20(7)U8	" "			3'6"			
MWC20(7)U9	" "			4'1"			
MWC20(7)UPINK	" "			1'3"			
MWC22(7)U0	" "			4'5"			
MWC22(7)U1	" "			10'7"			
MWC22(7)U2	" "			3'1"			
MWC22(7)U3	" "			2'11"			
MWC22(7)U4	" "			13'3"			
MWC22(7)U5	" "			9'1"			
MWC22(7)U6	" "			13'8"			
MWC22(7)U7	" "			3'6"			
MWC22(7)U8	" "			4'8"			
MWC22(7)UTAN	" "			2'8"			
MWC22(7)UPINK	" "			4'2"			
MWC22(7)U94	" "			5'2"			
MWC22(7)U95	" "			2'3"			
MWC22(7)U96	" "			6'7"			
MWC22(7)U7	" "			0'7"			
MWC22(7)U91	" "			0'9"			
MWC22(7)U92	" "			5'11"			
MWC22(7)U93	" "			13'8"			
MWC22(7)U94	" "			8'5"			
MWC22(7)U97	" "			0'11"			
MWC22(7)U2	" "			4'7"			
MWC22(7)B92	" "	CA157					
MWC22(7)B93	" "	CA157					
MWC22(7)B95	" "	CA157					

FREQ. SHIFT CONVERTER

PURCHASED ITEM		MATERIAL LIST		MODEL CFA-1		PROJ. NO.		LIST NO. ML-CFA-1	
				ISSUE		S T U V W X Y Z AA AB AC AD AE AF AG AH		SHEET 11 OF 14 SHEETS	
QUANTITY REQ.	PART NO.	REV	DWG	DESCRIPTION	REF	SYMBOLS			
			SIZE						
			ASIAK						
				<u>RAW MATERIALS</u>					
P 10' 0"	WI-100-1			1 Cable, Shielded					
P 20' 0"	WL-100-6			1 Wire, Buss Bar					
P 20' 0"	WL-100-7			1 Wire, Buss Bar					
P 20' 0"	WL-100-8			1 Wire, Buss Bar					
P 11' 1"	WI-101-2	B		1 Cable, Shield Flexible	A-359				
P 20' 0"	WI-141-34-9	B		1 Wire, El, Mag.					

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

CHECKED

APPROVED

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST		MODEL	PROJ. NO.												LIST NO.				
	QUANTITY REQ.	REV	ISSUE	CFA-1	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
L P Z	PART NO.	REV	DWG SIZE	DESCRIPTION	REF	SYMBOLS														
				<u>SUPPORTING DRAWINGS</u>																
1	A-359		1	Transformer, Audio	CK-150	T-7														
1	A-393		4	Cover, Bottom																
1	A-394		1	Terminal Board #8 Assembly	LD-142-2															
2	A-395		1	" " #6 "	LD-142-4															
1	A-396-1		1	" " #3 Assembly	LD-142-6															
1	A-399		1	Can, Oscillator Cover																
1	A-400		1	Terminal Board #2, Assembly	CK-150															
1	A-401		1	" " #1 "	CK-150															
2	A-402		1	" " #5 "	LD-142-5															
1	A-403		1	" " #7 "	LD-142-3															
1	A-404		2	" " #9 "	LD-142-1															
1	A-396-2		1	Terminal Board #4 Assembly	LD-142-7															
1	A-407		1	Left Chassis Assembly																
1	A-408		1	Front Chassis Assembly																
1	A-409		1	Rear Chassis Assembly																
1	A-410		1	Oscillator Sub. Assembly																
1	A-411		1	Bracket, Rear Condenser																
1	A-412		1	Bracket, Front Condenser																
1	CA-157		8	Cable, Left Chassis																
1	CA-158		8	Cable, Power																
1	CA-159		8	Cable, Center Chassis																
1	CK-149		8	Schematic Diagram																
1	CK-150		1	Wiring Diagram, Oscillator Assembly																
1	CK-151		2	Wiring Diagram, V-21																
1	CK-152		1	Wiring Diagram, Term. Bd. #5 & #6																
1	CK-153		1	Wiring Diagram, Term. Bd. #7																
1	CK-154		8	" " " " #8																

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.													LIST NO.						
	QUANTITY REQ.	REV	PART NO.	ISSUE	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	SHEET	OF	SHEETS	
				DWG	AH	AJ	AK	DESCRIPTION													REF	SYMBOLS		
				SIZE	<u>SUPPORTING DRAWINGS</u>																			
1			CK-155	8	Wiring Diagram, Terminal Board #9																			
1			CK-156	2	Component Layout, R.&L. Chassis																			
1			CK-157	2	Wiring Diagram, Rear Panel																			
1			CK-158	8	Component Layout, Center Chassis																			
1			CK-159	8	Component Layout, Rear Chassis																			
1			CK-216	2	Front Panel Wiring Diagram																			
1			CK-217	8	Block Diagram																			
			LD-142		Silk Screening, Terminal Boards																			
1			LD-143	4	C	Engraving, Front Panel													MS-277					
1			LD-411	8		Lettering, Center Chassis													MS-278					
1			LD-412	4		Lettering, Right Side Chassis													MS-280					
1			LD-413	4		Lettering, Rear Element Chassis													MS-282					
1			LD-414	4		Lettering, Left Side Chassis													MS-279					
1			LD-415	1		Lettering, Rear Condensor Bracket													MS-269					
1			LD-416	2		Lettering, Sub Chassis, FS Converter													MS-271					
1			LD-417	1		Lettering, Front Condensor Bracket													MS-270					
1			LD-432	1		Lettering, Pot Bracket													MS-283					
1			LD-433	1		Lettering, Reactor & Pot Mtg. Bracket													MS-284					
1			LD-434	1		Lettering, Tube Bracket													MS-275					
1			LD-			Lettering, Front Chassis													MS-281					
1			LD-142-1	1		Lettering, Terminal Board No. 9													A-404					
1			LD-142-2	1		Lettering, Terminal Board No. 8													A-394					
1			LD-142-3	1		Lettering, Terminal Board No. 7													A-403					
1			LD-142-4	1		Lettering, Terminal Board No. 6													A-395					
1			LD-142-5	1		Lettering, Terminal Board No. 5													A-402					
1			LD-142-6	1		Lettering, Terminal Board No. 3													A-396-1					
1			LD-142-7	1		Lettering, Terminal Board No. 4													A-396-2					

FREQ. SHIFT CONVERTER

PURCHASED ITEM	MATERIAL LIST			MODEL	PROJ. NO.													LIST NO.			
	QUANTITY REQ.	P P L	PART NO.	REV	SIZE	ISSUE													SHEET	OF	SHEETS
					DWG	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
					AJ	AK	DESCRIPTION													REF	SYMBOLS
							<u>LOOSE ITEMS</u>														
P	1		TM-105-9AL		2		Fanning Strip													For TM-100-9	
							<u>SPECS.</u>														
			S-156				Test Procedure														
							<u>SPECS.</u>														
							<u>Test Proc.</u>														
							6D, 6H														
							MODIFICATIONS FOR USE IN DDR-6B, 6D, 6H, 7J SYSTEMS														
							Delete the Following Items:														
	1		CA-103-72				Cable, Power (Sheet 1)														
	1		TM-105-9AL				Fanning Strip (Sheet 14)														

