

Effective: September 2002

Supersedes I.L. 40-220 dated March 1989

(|) Denotes Change Since Previous Issue

Type LCB II Relay Modules (with DIN Connectors)



Printed circuit modules should not be removed or inserted while the LCB is energized. Failure to observe this precaution can result in an undesired tripping output and/or component damage. In addition, modules should not be interchanged between relays without rechecking calibration.

These instructions contain a brief description, schematic, component location and bill of material for the following LCB Modules:

ALS-1	Analog Logic Power Supply
DTD	Demodulator/Time Delay
MD	Modulator/Demodulator
IFDT-1/2	Audio Dual Tone Interface
IFO-1/2	Fiber Optic Interface
RELAY	Relay Sensing Logic
DTT	Direct Transfer Trip
AXLM	Auxiliary Logic
ARTM-1/2	AR Trip Logic

All integrated circuits used on the modules are sensitive to and can be damaged by the discharge of static electricity. Electrostatic discharge precautions should be observed when handling modules or individual components.

1.0 CONSTRUCTION

The LCB modules are designed for insertions into a 3 rack unit LCB chassis. Module terminations are provided by means of a terminal connector.

Following a tabulation of the module widths and number of connector terminals.

Module Name	Module Location Widths	No. Connector Terminals
ALS-1	2	32
DTD	1	32
MD	1	32
IFDT-1/2	1	32
IFO-1/2	1	32
RELAY	1.75	32
DTT	1	32
AXLM	1	32
ARTM-1/2	3	32

NOTE: 1 module location width equals 1.2 inches.

2.0 MODULE APPLICATION/DESCRIPTION

2.1 ALS-1 ANALOG LOGIC POWER SUPPLY

The ALS-1 power supply covered in other instructions provides $\pm 15\text{Vdc}$ to power the LCB relay. Units are available for 48, 125 or 250Vdc station batteries. This module is covered by a separate I.L. 41-830.12.

2.2 DTD – DEMODULATOR AND TIME DELAY

The DTD module is used only for 3 terminal line applications and contains a demodulator for the second channel and a channel delay equalization circuit (TD) to compensate for possible different delays in the two channels.

All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding this particular installation, operation or maintenance of this equipment, the local ABB Inc. representative should be contacted.

2.3 MD – MODULATOR/DEMOMULATOR

The MD module contains both the modulator and demodulator for transmission and detection of the LCB communicated signal.

The modulator generates the 1.7 KHz carrier signal and contains the circuitry to provide the modulation of the carrier signal based on the sequence output voltage from the RELAY module. In turn, the modulated output connects to the channel interface for transmission to the remote terminal.

The demodulator receives its information for the respective channel interface (audio or optical) and reconstructs the remote LCB signal.

2.4 IFDT – AUDIO DUAL TONE INTERFACE

The IFDT module contains the circuitry to provide both the transmit and receive isolated interface with the user's audio tone equipment or equivalent.

The transmitter provides adjustable output for proper coordination with the communication medium.

In the receive portion, input level sensitivity is adjustable and stabilized with an AGC circuit. Detection circuits are employed for high and low level, excessive noise to signal levels, frequency translation and missing cycle periods.

For 3 terminal line applications, two channel interface modules are required.

2.5 IFO – OPTICAL INTERFACE

The IFO module contains the circuitry to provide both the transmit and receive interface to fiber optic cable.

The IFO has various versions depending on transmit power, optical wavelength (850 or 1300 nm) and optical connectors (SMA or ST).

The standard transmitter consists of a fiber optic LED emitter mounted on a bracket extending to the rear of the module.

The High Power Output Transmitter contains a Fiber Optic Edge Emitting LED mounted on the IFO module. The LED assembly has a "PIGTAIL" with the ST connector mating with the bulkhead connector mounted on a bracket.

For the receive portion, a bulkhead connector mounted on

the same bracket as the emitter provides a means for connection of the receive fiber optic cable. From this connector, a larger core fiber connects to a fiber optic PIN photodiode detector in a shielded receiver circuit. Following the detection, the receiver employs an AGC circuit, low level and missing cycle detection.

For 3 terminal line applications, two channel interface modules are required.

2.6 RELAY – RELAY SENSING

The RELAY module contains the circuitry to generate, compare and determine trip for the LCB current differential system relaying quantities. Included are: a sequence network with independent sensitivity selection for positive (P), negative (N) and zero (Z), adjustable system pickup setting (T DIAL), adjustable channel delay equalizer, comparison circuits for the local versus remote quantities, trip detection and channel monitoring functions.

2.7 DTT – DIRECT TRANSFER TRIP

The DTT module is used as an option to provide a direct transfer trip function utilizing the same channel as that employed for normal LCB relaying.

For tripping, the LCB system utilizes the ARTM-2 module, which provides 2 AR relays, with one dedicated for direct transfer trip.

2.8 AXLM – AUXILIARY LOGIC

The AXLM module is used to provide auxiliary logic, timing, indication and input/output features associated with the LCB relay system. Such features include electrical target reset, trip desensitizing on breaker closing, overcurrent trip options on loss of channel(s), and sustained loss of channel monitoring and indication.

2.9 ARTM-1/2 – AR TRIP MODULE

The ARTM-1, single trip, or ARTM-2 double trip (for use with direct transfer trip option), module provides the final AR contact tripping output for the LCB relay system. Block of tripping and indication during the dc power up/down as well as provision for manual reset are also provided on this module.

3.0 MODULE REFERENCE INFORMATION (REFER TO IL 41-830.12)

ALS-1 Module – (Refer to I.L. 41-830.12)

Style 1615C51:	G01 - 48Vdc
	G02 - 125 Vdc
	G03 - 250 Vdc

DTD Module – Style 1609C38G02

Internal Schematic:	1355D47
Component Location:	1609C38
Chassis Location:	POS. C

MD Module – Style 1609C38G01

Internal Schematic:	1355D39
Component Location:	1609C38
Chassis Location:	POS. D

IFDT Module – Style 1609C39G01

Internal Schematic:	1355D40
Component Location:	1609C39
Chassis Location:	POS. F (Channel 1)
	POS. E (Channel 2)

IFO Module (Standard) –

Style 1609C40G01	(850NM/SMA)
Style 1609C40G02	(1300NM/SMA)
Style 1609C40G03	(850NM/ST)
Style 1609C40G04	(1300NM/ST)
Internal Schematic:	1355D41
Component Location:	1499B44
Chassis Location:	POS. F (Channel 1)
	POS. E (Channel 2)

IFO Module (High Power) –

Style 1609C96G01 (1300NM/ST)	
Internal Schematic:	1355D70
Component Location:	1609C96
Chassis Location:	POS. F (Channel 1)
	POS. E (Channel 2)

RELAY Module – Style 1609C41G01

Internal Schematic:	1355D42
Component Location:	1609C41
Chassis Location:	POS. G

DTT Module – Style 1609C42G01 (2 Term.) Style 1609C42G02 (3 Term.)

Internal Schematic:	1355D43
Component Location:	1609C42
Chassis Location:	POS. K

AXLM Module – Style 1609C43G01

Internal Schematic:	1355D44
Component Location:	1609C43
Chassis Location:	POS. L

ARTM-1 Module – Style 1609C44G01

(No Transfer Trip)	
Internal Schematic:	1355D45
Component Location:	1499B49
Chassis Location:	POS. M

ARTM-2 Module –

Style 1609C44G02 (Main assembly)	
Style 1581C27G01 (Sub-assembly)	

(Transfer Trip)

Internal Schematic:	1355D45
Component Location:	
1499B49	(Main assembly)
1484B32	(Sub-assembly)
Chassis Location:	POS. M

4.0 RENEWAL PARTS

Repair work can be done most satisfactorily at the factory. However, interchangeable spare modules or components can be furnished to the customers who are equipped for doing repair work. When ordering parts (components, modules, etc.) always give the complete catalog number and appropriate ABB style number(s).

ATTACHMENTS

A. Internal Schematics

Figure	Module	Drawing
1	DTD	1355D47
2	MD	1355D39
3	IFDT	1355D40
4	IFO (Standard)	1355D41
5	IFO (High Power)	1355D70
6	RELAY	1355D42
7	DTT	1355D43
8	AXLM	1355D44
9	ARTM-1/2	1355D45

B. Component Locations

Figure	Module	Drawing
10	MD/DTD	1609C38
11	IFDT	1609C39
12	IFO (Standard)	1499B44
13	IFO (High Power)	1609C96
14	RELAY	1609C41
15	DTT	1609C42
16	AXLM	1609C43
17	ARTM-1 (main assembly)	1499B49
18	ARTM-2 (sub-assembly)	1484B32



Figure 1: Internal Schematic DTD Module

CAPACITOR	STYLE	RESISTOR	STYLE
C11	001 MFD 200V +-5% MET-POLY CARB	R33	3.01K 1/8W 1% METAL FILM
C12	001 MFD 200V +-2% MET-POLY CARB	R34	20K 1/8W 1% METAL FILM
C13	001 MFD 200V +-5% MET-POLY CARB	R35	20K 1/8W 1% METAL FILM
C14	270 PF 500V +-2% MICA	R36	3.92K 1/8W 1% METAL FILM
C15	022 MFD 100V +-2% MET-POLY CARB	R37	121K 1/8W 1% METAL FILM
C16	001 MFD 200V +-5% MET-POLY CARB	R38	121K 1/8W 1% METAL FILM
C17	001 MFD 200V +-5% MET-POLY CARB	R39	8.25K 1/4W 1% METAL FILM
C18	001 MFD 200V +-5% MET-POLY CARB	R40	82.5K 1/8W 1% METAL FILM
C19	01 MFD 200V +-5% MET-POLY CARB	R41	301K 1/8W 1% METAL FILM
C20	10 PF 500V +-5% MICA	R42	301K 1/8W 1% METAL FILM
C21	1 MFD 100V +-5% MET-POLY CARB	R43	10K 1/8W 1% METAL FILM
C22	1 MFD 100V +-5% MET-POLY CARB	R44	15M 5% CARB 1/2W
C23	47 PF 500V +-2% MICA	R45	100K 1/8W 1% METAL FILM
C24	1 MFD 100V +-5% MET-POLY CARB	R46	51.1K 1/8W 1% METAL FILM
C25	1 MFD 100V +-5% MET-POLY CARB	R47	51.1K 1/8W 1% METAL FILM
C26	001 MFD 200V +-5% MET-POLY CARB	R48	10K 1/8W 1% METAL FILM
C27	1 MFD 100V +-5% MET-POLY CARB	R49	15K 1/8W 1% METAL FILM
C28	5100 PF 500V +-2% MICA	R50	30.1 OHM 1/8W 1% METAL FILM
C29	1 MFD 100V +-5% MET-POLY CARB	R51	15K 1/8W 1% METAL FILM
C30	47 MFD 100V +-5% MET-POLY CARB	R52	30.1 OHM 1/8W 1% METAL FILM
C31	1 MFD 100V +-5% MET-POLY CARB	R53	10K 1/8W 1% METAL FILM
C32	1 MFD 100V +-5% MET-POLY CARB	R54	10K 1/8W 1% METAL FILM
C33	0.47 MFD 100V +-5% MET-POLY CARB	R55	51.1K 1/8W 1% METAL FILM
C34	0.1 MFD 200V +-5% MET-POLY CARB	R56	10K 1/8W 1% METAL FILM
C35	0.12 MFD 200V +-5% MET-POLY CARB	R57	15K 1/8W 1% METAL FILM
C36	0.1 MFD 200V +-5% MET-POLY CARB	R58	10K 1/8W 1% METAL FILM
C37	0.1 MFD 200V +-5% MET-POLY CARB	R59	10K 1/8W 1% METAL FILM
C38	100 MFD 35V +-20% TANTALUM	R60	20K 1/8W 1% METAL FILM
C39	0.1 MFD 35V +-5% MET-POLY CARB	R61	25K 1/8W 1% METAL FILM
C40	100 MFD 35V +-5% MET-POLY CARB	R62	500 OHM 1/4W 1% METAL FILM
C41	100 MFD 35V +-5% TANTALUM	R63	500 OHM 1/4W 1% METAL FILM
		R64	500 OHM 1/4W 1% METAL FILM
		R65	500 OHM 1/4W 1% METAL FILM
		R66	133K 1/8W 1% METAL FILM
		R67	150K 1/8W 1% METAL FILM
		R68	150K 1/8W 1% METAL FILM
		R69	20K 1/8W 1% METAL FILM
		R70	20K 1/8W 1% METAL FILM
		R71	20K 1/8W 1% METAL FILM
		R72	20K 1/8W 1% METAL FILM
		R73	51.1K 1/8W 1% METAL FILM
		R74	100K 1/8W 1% METAL FILM
		R75	150K 1/8W 1% METAL FILM
		R76	75K 1/8W 1% METAL FILM
		R77	75K 1/8W 1% METAL FILM
		R78	301K 1/8W 1% METAL FILM
		R79	301K 1/8W 1% METAL FILM
		R80	200K 1/8W 1% METAL FILM
		R81	1K 1/8W 1% METAL FILM
		R82	200K 1/8W 1% METAL FILM
		R83	200K 1/8W 1% METAL FILM
		R84	200K 1/8W 1% METAL FILM
		R85	200K 1/8W 1% METAL FILM
		R86	200K 1/8W 1% METAL FILM
		R87	2.7 OHM 1/2W 5% CARB
		R88	2.7 OHM 1/2W 5% CARB
		R89	10K 1/8W 1% METAL FILM
			3535A33H47
			3535A33H30
			3535A33H58
			3535A33H09
			3535A33H09
			3535A33H89
			3535A33H89
			3535A33H47
			3535A33H01
			3535A33H39
			187A290H31
			187A290H40
			3535A33H01
			3535A33H69
			3535A33H01
			3535A33H18
			3535A33H47
			3535A33H18
			3535A33H47
			3535A33H01
			3535A33H69
			3535A33H01
			3535A33H18
			3535A33H85
			3535A33H47
			3535A33H47
			3535A33H30
			3535A33H01
			3535A33H30
			3535A33H30
			3535A33H01
			3535A33H30
			187A290H31
			187A290H31
			RM1002FQ49

Figure 1a: Internal Schematic DTD Module

Sub 3
1355D47

Figure 2: Internal Schematic MD Module

Sub 5
1355D39

Sub 6
1355D40

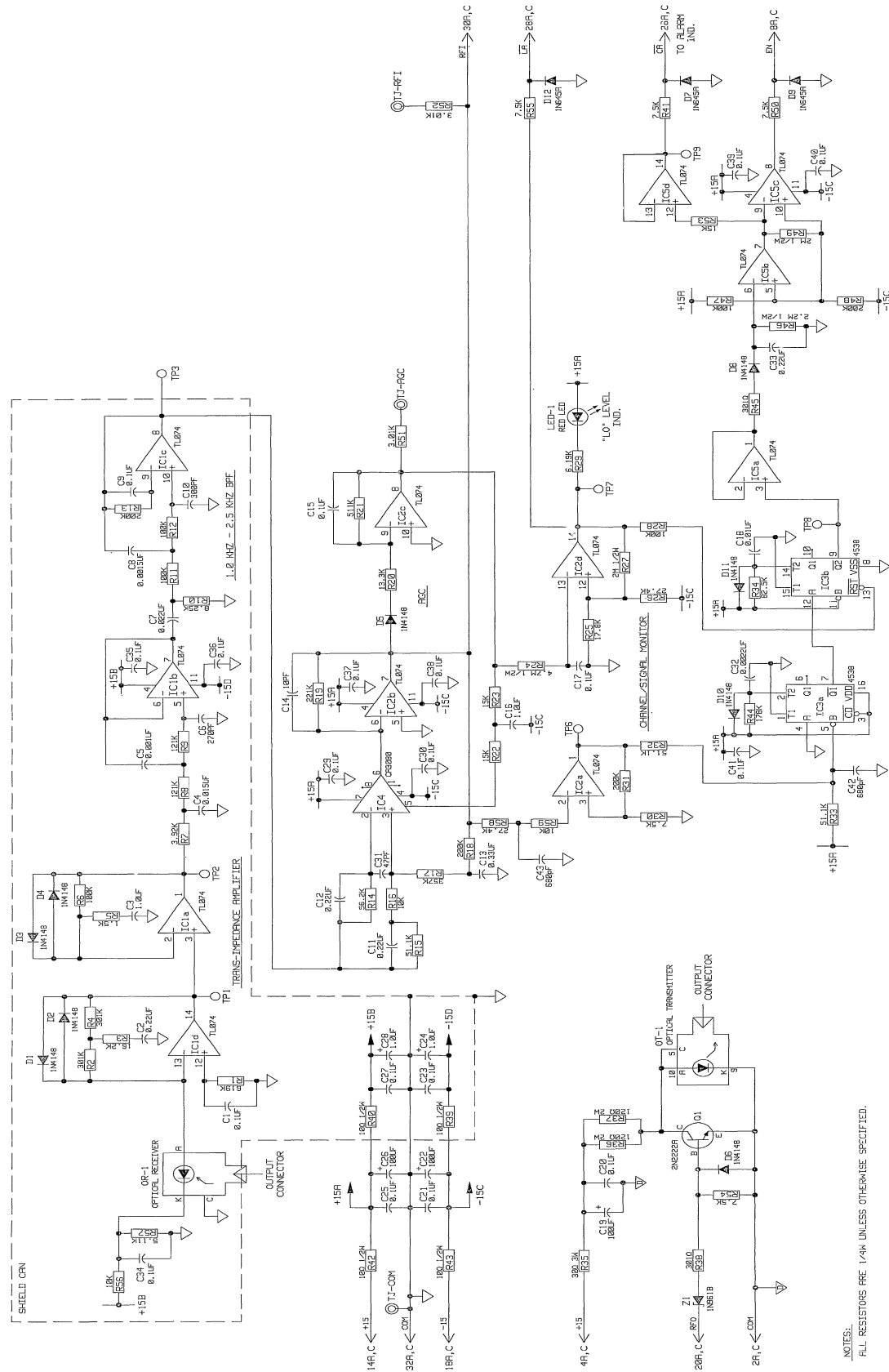
Figure 3: Internal Schematic IFDT Module



Figure 4: Internal Schematic IFO Module (Standard)

CAPACITORS			TRANSISTORS		
COMP LOC	DESCRIPTION	STYLE	COMP LOC	DESCRIPTION	STYLE
C1	.1 MFD 100V +-5% MET-POLY CARB	3534A58H03	Q1	2N2222A NPN	762A572H15
C2	.022 MFD 100V +-2% MET-POLY CARB	3534A58H01			
C3	1.0UF 50V +-5% MET-POLY CARB	3534A58H11			
C4	.015 MFD 200V +-2% MET-POLY CARB	3534A58H05			
C5	.001 MFD 200V +-1% MET-POLY CARB	3534A58H01			
C6	270 PF 500V +-2% MICA	762A572H12			
C7	.022 MFD 100V +-2% MET-POLY CARB	3534A58H01			
C8	.0015 MFD 600V +-2% MET-POLY CARB	3534A58H08			
C9	300 PF 500V +-5% MET-POLY CARB	187A520H03			
C10	22 MFD 100V +-5% MET-POLY CARB	3534A58H10			
C12	.35UF 50V +-5% MET-POLY CARB	863A166H16	Z1	1N681B 10V 5% 400MW	186A575H07
C13	10 PF 500V +-5% MICA	763A209H03			
C14	.1 MFD 100V +-5% MET-POLY CARB	3534A58H11			
C15	1.0UF 50V +-5% MET-POLY CARB	3534A58H08			
C16	.01 MFD 200V +-2% MET-POLY CARB	3534A58H02			
C17	.01 MFD 200V +-2% MET-POLY CARB	3534A58H01			
C18	100 MFD .35V +-20% TANTALUM	863A363H01			
C19	.1 MFD 100V +-5% MET-POLY CARB	3534A58H08			
C20	.1 MFD 100V +-5% MET-POLY CARB	863A363H01			
C21	100 MFD .35V +-20% TANTALUM	863A363H01			
C22	.1 MFD 100V +-5% MET-POLY CARB	3534A58H10			
C23	.1 MFD 100V +-5% MET-POLY CARB	863A363H01			
C24	.1 MFD 35V 10% TANTALUM	863A363H01			
C25	.1 MFD 100V +-5% MET-POLY CARB	3534A58H08			
C26	100 MFD .35V +-20% TANTALUM	863A363H01			
C27	.1 MFD 100V +-5% MET-POLY CARB	863A363H01			
C28	.1 MFD 35V 10% TANTALUM	863A363H01			
C29	.1 MFD 100V +-5% MET-POLY CARB	3534A58H08			
C30	.1 MFD 100V +-5% MET-POLY CARB	3534A58H08			
C31	47 PF 500V +-2% MICA	763A209H17			
C32	.022 UF 50V 400V MET. POLY CARB	3534A58H05			
C33	.22 MFD 100V +-5% MET-POLY CARB	3534A58H10			
C34	.1 MFD 50V 20% CERAMIC	3532A28H13			
C35	.1 MFD 50V 20% CERAMIC	3532A28H13			
C36	.1 MFD 50V 20% CERAMIC	3532A28H13			
C37	.1 MFD 50V 20% CERAMIC	3532A28H13			
C38	.1 MFD 50V 20% CERAMIC	3532A28H13			
C39	.1 MFD 50V 20% CERAMIC	3532A28H13			
C40	.1 MFD 50V 20% CERAMIC	3532A28H13			
C41	680pF 300V +-2% DIPPED MICA	3532A28H17			
C42	680pF 300V +-2% DIPPED MICA	3532A28H17			
C43		3532A28H17			
DIODES			OPTICAL COMPONENTS		
COMP LOC	DESCRIPTION	STYLE	COMP LOC	DESCRIPTION	STYLE
LED1	RED LED EDGE MOUNT 550-406	3534A58H03	Q1	HFE 3943-002 HONEYWELL DETECTOR	964A471H02
D1	1N4148	836A528H06	Q1	HFE 3943-003 HONEYWELL DETECTOR	964A471H01
D2	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D3	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D4	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D5	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D6	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D7	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D8	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D9	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D10	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D11	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06
D12	1N4148	836A528H06	Q1	LYTEL SNA DETECTOR 0688-001	964A471H06

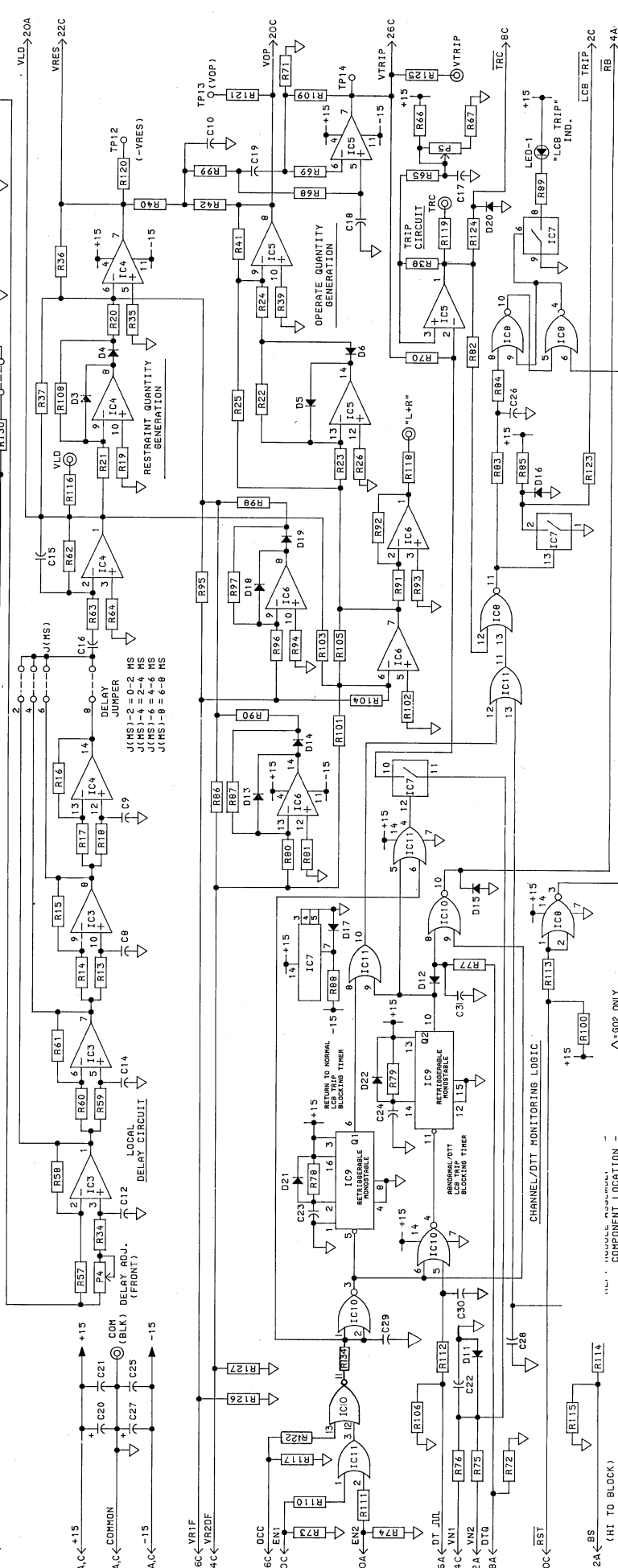
Figure 4a: Internal Schematic IFO Module (Standard)



Sub 1
1355D70

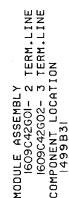
CAPACITORS		COMP LOC		STYLE	
DESCRIPTION	LOC	LOC	LOC	LOC	LOC
.1 MFD 100V +-5% MET-POLY CARB	C01	3534A68H08	R1	619K	25W 1% METAL FILM
.022 MFD 100V +-2% MET-POLY CARB	C02	3533A53H01	R2	307K	25W 1% METAL FILM
.1 MFD 50V +-5% MET-POLY CARB	C03	3534A68H11	R3	16.2K	25W 1% METAL FILM
.015 MFD 200V +-2% MET-POLY CARB	C04	3534A68H05	R4	307K	25W 1% METAL FILM
.001 MFD 200V +-1% MET-POLY CARB	C05	3534A68H01	R5	1.50K	25W 1% METAL FILM
.270 PF 500V +-2% MICA	C06	763A757H12	R6	100K	25W 1% METAL FILM
.022 MFD 100V +-2% MET-POLY CARB	C07	3533A53H01	R7	3.92K	25W 1% METAL FILM
.0015 MFD 500V +-2% MET-POLY CARB	C08	3533A53H08	R8	121K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C09	3534A68H08	R9	121K	25W 1% METAL FILM
.33 MFD 500V +-2% MICA	C10	187A584H08	R10	8.25K	25W 1% METAL FILM
.22 MFD 100V +-5% MET-POLY CARB	C11	3534A68H10	R11	100K	25W 1% METAL FILM
.22 MFD 100V +-5% MET-POLY CARB	C12	3534A68H10	R12	100K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C13	663A168H16	R13	200K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C14	763A209H03	R14	56.2K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C15	3534A68H08	R15	51.1K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C16	3534A68H11	R16	10K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C17	3534A68H08	R17	357K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C18	3534A68H08	R18	200K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C19	3534A68H08	R19	221K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C20	806A363H01	R20	13.3K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C21	3534A68H08	R21	13.3K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C22	3534A68H08	R22	15K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C23	806A363H01	R23	15K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C24	3534A68H08	R24	4.7M	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C25	3534A68H08	R25	2.7K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C26	3534A68H08	R26	2.7K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C27	3534A68H08	R27	2.7K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C28	837A241H15	R28	100K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C29	3534A68H08	R29	6.19K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C30	3534A68H08	R30	7.19K	25W 1% METAL FILM
.1 MFD 100V +-5% MET-POLY CARB	C31	3534A68H08	R31	200K	25W 1% METAL FILM
.0022 MFD 400V 2% MET-POLY CARB	C32	763A209H17	R32	51.1K	25W 1% METAL FILM
.22 MFD 100V +-5% MET-POLY CARB	C33	3534A68H10	R33	51.1K	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C34	3532A29H13	R34	82.5K	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C35	3532A29H13	R35	82.5K	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C36	3532A29H13	R36	30 OHM	3M 1% WIRE WOUND
.1 MFD 50V 20% CERAMIC	C37	3532A29H13	R37	120 OHM	2W 5% MOLDED COMP
.1 MFD 50V 20% CERAMIC	C38	3532A29H13	R38	321 OHM	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C39	3532A29H13	R39	10 OHM	5W 5% FIXED COMP
.1 MFD 50V 20% CERAMIC	C40	3532A29H13	R40	10 OHM	5W 5% FIXED COMP
.1 MFD 50V 20% CERAMIC	C41	3532A29H13	R41	10 OHM	5W 5% FIXED COMP
.1 MFD 50V 20% CERAMIC	C42	3532A29H13	R42	10 OHM	5W 5% FIXED COMP
.1 MFD 50V 20% CERAMIC	C43	3532A29H13	R43	10 OHM	5W 5% FIXED COMP
.1 MFD 50V 20% CERAMIC	C44	3532A29H13	R44	178K	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C45	3532A29H13	R45	301 OHM	25W 1% METAL FILM
.1 MFD 50V 20% CERAMIC	C46	3532A29H13	R46	2.2M OHM	

Figure 5a: Internal Schematic IFO Module (High Power)



Sub /
1355D42

Figure 6: Internal Schematic Relay Module



Sub 2
1355D43

Figure 7: Internal Schematic DTT Module

CAPACITOR		GROUPS 1 2		STYLE		GROUPS 1 2	
C01	10 MFD 35V +-5% TANTALUM	11		862A53BH12		11	
C02	0.1 MFD 100V +-5% TANTALUM	11		862A53BH12		11	
C03	0.1 MFD 100V +-5% TANTALUM	11		862A53BH12		11	
C04	0.1 MFD 100V +-5% MET-POLYCARB	11		353A46BH08		11	
C05	0.047 MFD 100V +-5% MET-POLYCARB	11		353A46BH07		11	
C06	0.022 MFD 100V +-2% MET-POLYCARB	11		353A53BH01		11	
C07	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C08	0.015 MFD 500V +-2% MET-POLYCARB	11		353A46BH08		11	
C09	0.015 MFD 500V +-2% MET-POLYCARB	11		353A46BH08		11	
C10	0.022 MFD 100V +-2% MET-POLYCARB	11		353A53BH01		11	
C11	6690PF 50V +-2% POLYSTY	11		3537A23H65		11	
C12	5100 PF 500V +-2% MICA	11		187A58A4H05		11	
C13	1500 PF 500V +-2% MICA	11		762A75H03		11	
C14	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C15	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C16	6690PF 50V +-2% POLYSTY	11		3537A23H65		11	
C17	3000 PF 500V +-2% MICA	11		3532A31H54		11	
C18	3000 PF 500V +-2% MICA	11		3532A31H54		11	
C19	20 PF 300V +-5% MICA	11		3532A31H47		11	
C20	510 PF 500V +-2% MICA	11		861A94BH10		11	
C21	0.008 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C22	0.008 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C23	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C24	0.001UF 200V +-5% MET-POLYCARB	11		353A46BH08		11	
C25	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C26	0.015 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C27	0.015 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C28	66.900 PF 50V +-2% POLYSTY	11		3537A23H65		11	
C29	66.900 PF 50V +-2% POLYSTY	11		3537A23H65		11	
C30	5100 PF 500V +-2% MICA	11		187A58A4H05		11	
C31	1500 PF 500V +-2% MICA	11		762A75H03		11	
C32	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C33	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C34	3000 PF 500V +-2% MICA	11		3532A31H54		11	
C35	3000 PF 500V +-2% MICA	11		3532A31H54		11	
C36	3000 PF 500V +-2% MICA	11		3532A31H54		11	
C37	20 PF 300V +-5% MICA	11		3532A31H47		11	
C38	510 PF 500V +-2% MICA	11		861A94BH10		11	
C39	0.0048 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C40	0.0048 MFD 200V +-2% MET-POLYCARB	11		353A46BH08		11	
C41	0.1 MFD 50V +-20% CERAMIC	11		353A29BH13		11	
C42	.05MFD 100V +-20% CERAMIC	11		184A663H02		11	
C43	.05MFD 100V +-20% CERAMIC	11		184A663H02		11	

DIODE		GROUPS 1 2		STYLE		GROUPS 1 2	
L001	RED LED (EDGE MOUNT)	11		3508A22H01		11	
L002	RED LED (EDGE MOUNT)	11		3508A22H01		11	
RESISTOR				STYLE			
R01	2.7 OHM 1/2W 5% CARBON	11		187A29BH11		11	
R02	2.7 OHM 1/2W 5% CARBON	11		187A29BH11		11	
R03	20K 2W 5% CARBON	11		187A29BH11		11	
R04	20K 2W 5% CARBON	11		187A29BH11		11	
R05	6.8K 2W 5% CARBON	11		187A29BH11		11	
R06	430 OHM 1/2W 2% METAL GLAZE	11		187A29BH11		11	
R07	430 OHM 1/2W 2% METAL GLAZE	11		187A29BH11		11	
R08	30K 1/2W 5% METAL FILM	11		187A29BH11		11	
R09	30K 1/2W 5% METAL FILM	11		187A29BH11		11	
R10	750K 1/8W 1% METAL FILM	11		3532A3BH05		11	
R11	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R12	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R13	5.11K 1/8W 1% METAL FILM	11		3535A37H47		11	
R14	5.11K 1/8W 1% METAL FILM	11		3535A37H47		11	
R15	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R16	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R17	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R18	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R19	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R20	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R21	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R22	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R23	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R24	1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R25	200K 1/8W 1% METAL FILM	11		3535A37H47		11	
R26	200K 1/8W 1% METAL FILM	11		3535A37H47		11	
R27	6.8K 1/8W 1% METAL FILM	11		3535A37H47		11	
R28	150K 1/8W 1% METAL FILM	11		3535A37H47		11	
R29	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R30	8.25K 1/8W 1% METAL FILM	11		3535A37H47		11	
R31	92.5K 1/8W 1% METAL FILM	11		3535A37H47		11	
R32	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R33	207K 1/8W 1% METAL FILM	11		3535A37H47		11	
R34	207K 1/8W 1% METAL FILM	11		3535A37H47		11	
R35	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R36	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R37	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R38	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R39	12K 1/8W 1% METAL FILM	11		3535A37H47		11	
R40	12K 1/8W 1% METAL FILM	11		3535A37H47		11	
R41	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R42	51.1 OHM 1/8W 1% METAL FILM	11		3535A37H47		11	
R43	3.01K 1/8W 1% METAL FILM	11		848A819H94		11	
R44	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R45	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R46	432K 1/8W 1% METAL FILM	11		3535A37H47		11	
R47	43.2K 1/8W 1% METAL FILM	11		3535A37H47		11	
R48	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R49	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R50	51.1 OHM 1/8W 1% METAL FILM	11		3535A37H47		11	
R51	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R52	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R53	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R54	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R55	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R56	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R57	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R58	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R59	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R60	200K 1/8W 1% METAL FILM	11		3535A37H47		11	
R61	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R62	6.19K 1/8W 1% METAL FILM	11		3535A37H47		11	
R63	150K 1/8W 1% METAL FILM	11		3535A37H47		11	
R64	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R65	8.25K 1/8W 1% METAL FILM	11		3535A37H47		11	
R66	82.5K 1/8W 1% METAL FILM	11		3535A37H47		11	
R67	30.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R68	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R69	207K 1/8W 1% METAL FILM	11		3535A37H47		11	
R70	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R71	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R72	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R73	51.1K 1/8W 1% METAL FILM	11		3535A37H47		11	
R74	100K 1/8W 1% METAL FILM	11		3535A37H47		11	
R75	121K 1/8W 1% METAL FILM	11		3535A37H47		11	
R76	10K 1/8W 1% METAL FILM	11		3535A37H47		11	
R77	10K 1/8W 1% METAL FILM	11		3535A37H47		11	

ZENER		GROUPS 1 2		STYLE		GROUPS 1 2	
Z01	1N4747A 20V 1W 5%	11		3508A22H01		11	
Z02	1N752A 5.6V 400mW 5%	11		3508A22H01		11	
LINK				STYLE			
DTT KEY				BLUE CLIP LINK		3532A54H01	

* GROUP 1 IS 2 TERMINAL LINES
GROUP 2 IS 3 TERMINAL LINES

Figure 7a: Internal Schematic DTT Module

Sub 2
1355D43

CAPACITOR		STYLE	
C01	10 MFD 35V +5% TANTALUM	862F530H12	
C02	10 MFD 100V +5% MET-POLY CRB	3534F68H06	
C03	10 MFD 100V +5% MET-POLY CRB	3534F68H10	
C04	22 MFD 100V +5% MET-POLY CRB	3534F68H11	
C05	1.0 MFD 100V +5% MET-POLY CRB	3534F68H16	
C06	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C07	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C08	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C09	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C10	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C11	6.8 MFD 35V +5% TANTALUM	184R611H21	
C12	6.8 MFD 35V 5% TANTALUM	184R615H21	
C13	6.8 MFD 100V +5% MET-POLY CRB	3534F68H09	
C14	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C15	1.0 MFD 100V +5% MET-POLY CRB	3534F68H11	
C16	1.0 MFD 100V +5% MET-POLY CRB	3534F68H16	
C17	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C18	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C19	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C20	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C21	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C22	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C23	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C24	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
C25	1.0 MFD 100V +5% MET-POLY CRB	3534F68H06	
DIODE		STYLE	
D01	1N455A 225V	837F692H03	
D02	1N455A 225V	837F692H03	
D03	1N455A 225V	837F692H03	
D04	1N455A 225V	837F692H03	
D05	1N455A 225V	837F692H03	
D06	1N455A 225V	837F692H03	
D07	1N455A 225V	837F692H03	
D08	1N455A 225V	837F692H03	
D09	1N455A 225V	837F692H03	
D10	1N455A 225V	837F692H03	
D11	1N455A 225V	837F692H03	
D12	1N455A 225V	837F692H03	
D13	1N455A 225V	837F692H03	
D14	1N455A 225V	837F692H03	
D15	1N455A 225V	837F692H03	
INT CKT		STYLE	
IC01	4N55 OPTICAL COUPLER	774B335H01	
IC02	4N55 OPTICAL COUPLER	774B335H01	
IC03	4N55 OPTICAL COUPLER	774B335H01	
IC04	4N55 OPTICAL COUPLER	774B335H01	
IC05	4N55 OPTICAL COUPLER	774B335H01	
IC06	4N55 OPTICAL COUPLER	774B335H01	
IC07	4N55 OPTICAL COUPLER	774B335H01	
IC08	4N55 OPTICAL COUPLER	774B335H01	
IC09	4N55 OPTICAL COUPLER	774B335H01	
IC10	4N55 OPTICAL COUPLER	774B335H01	
IC11	4N55 OPTICAL COUPLER	774B335H01	
IC12	4N55 OPTICAL COUPLER	774B335H01	
IC13	4N55 OPTICAL COUPLER	774B335H01	
IC14	4N55 OPTICAL COUPLER	774B335H01	
IC15	4N55 OPTICAL COUPLER	774B335H01	
LED		STYLE	
LED 1	RED LED (EDGE MOUNT)	3508R22H01	
LED 2	RED LED (EDGE MOUNT)	3508R22H01	
LED 3	RED LED (EDGE MOUNT)	3508R22H01	
POT		STYLE	
P01	20K 3/4W +10% TRIMPOT	3527R30H04	
P02	20K 3/4W +10% TRIMPOT	3527R30H04	
P03	20K 3/4W +10% TRIMPOT	3527R30H04	
P04	20K 3/4W +10% TRIMPOT	3527R30H04	
TRANSISTOR		STYLE	
Q01	2N2222A, NPN	785R672H17	
Q02	2N2222A, NPN	785R672H17	

Sub 4
1355D44

Figure 8a: Internal Schematic AXLM Module

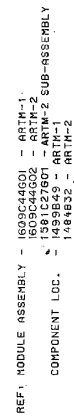


Figure 9: Internal Schematic ARTM-1 and 2 Module

1609C44G01 & 1609C44G02

ITEM	PART NAME	DESCRIPTION	STYLE
AR-1	RELAY	1-6 OHM COIL, 10V, 4A	408C6H5G4
C1	'CAPACITOR	100 MFD .35V, +-20% TANTALUM	880A333H01
C2	CAPACITOR	.1 MFD 100V +-5% TANTALUM CARB	353A68H08
C3	CAPACITOR	.1 MFD 100V +-5% TANTALUM CARB	353A68H08
C4	CAPACITOR	.47 MFD .300V, +-10% MYLAR	188A696H01
C5	CAPACITOR	100 MFD .35V, +-20% TANTALUM CARB	880A333H01
C6	CAPACITOR	100 MFD .35V, +-20% TANTALUM CARB	880A333H01
C7	CAPACITOR	.033 MFD 100V, +-5% MET-POLY CARB	353A68H08
C8	CAPACITOR	.033 MFD 100V, +-5% MET-POLY CARB	353A68H08
C9	CAPACITOR	.1 MFD 100V +-5% MET-POLY CARB	353A68H08
D1	CAPACITOR	.033 MFD 100V, +-5% MET POLY CARB	353A68H08
D17	CAPACITOR	220 PPF 500V +/-5% DIPPED MICA	353A233H01
D2	DIODE	IN645A	837A692H03
D3	DIODE	IN645A	837A692H03
D4	DIODE	IN593B	188A328H24
D5	DIODE	IN645A	837A692H03
D6	DIODE	IN645A	837A692H03
D7	DIODE	IN645A	837A692H03
D8	DIODE	IN645A	837A692H03
D9	DIODE	IN645A	837A692H03
D10	DIODE	IN593B	188A328H24
D11	INT CKT	MC140238AL TRIPLE 3 INPUT NAND	352TA26H03
D12	INT CKT	KC140118AL QUAD-2 INPUT NAND	352TA09H02
D13	INT CKT	MC140668AL QUAD BILATERAL SWITCH	352TA09H02
J1	JUMPER	0 OHM	862A478H01
J2	JUMPER	0 OHM	862A478H01
LED-1	DIODE	RED LED (EDGE MOUNT)	3508A22H01
LED-2	DIODE	RED LED (EDGE MOUNT)	3508A22H01
PS-1	SWITCH	PUSHBUTTON	144NC63H01
R1	TRANSISTOR	2N2222A, NPN	762A672H15
R2	TRANSISTOR	2N2204A PNP	762A672H17
R3	TRANSISTOR	2N2222A, NPN	762A672H17
R4	TRANSISTOR	2N2222A, NPN	762A672H17
R5	TRANSISTOR	2N2222A, NPN	762A672H15
R6	TRANSISTOR	2N2222A, NPN	762A672H15
R7	TRANSISTOR	2N2222A, NPN	762A672H15
R8	TRANSISTOR	2N2222A, NPN	762A672H15
R9	TRANSISTOR	2N2222A, NPN	762A672H15
R10	TRANSISTOR	2N2222A, NPN	762A672H15
R11	TRANSISTOR	2N2222A, NPN	762A672H15
R12	TRANSISTOR	2N2222A, NPN	762A672H15
R13	TRANSISTOR	2N2222A, NPN	762A672H15
R14	TRANSISTOR	2N2222A, NPN	762A672H15
R15	TRANSISTOR	2N2222A, NPN	762A672H15
R16	TRANSISTOR	2N2222A, NPN	762A672H15
R17	TRANSISTOR	2N2222A, NPN	762A672H15
R18	TRANSISTOR	2N2222A, NPN	762A672H15
R19	TRANSISTOR	2N2222A, NPN	762A672H15
R20	TRANSISTOR	2N2222A, NPN	762A672H15
R21	TRANSISTOR	2N2222A, NPN	762A672H15
R22	TRANSISTOR	2N2222A, NPN	762A672H15
R23	TRANSISTOR	2N2222A, NPN	762A672H15
R24	TRANSISTOR	2N2222A, NPN	762A672H15
R25	TRANSISTOR	2N2222A, NPN	762A672H15
R26	TRANSISTOR	2N2222A, NPN	762A672H15
R27	TRANSISTOR	2N2222A, NPN	762A672H15
R28	TRANSISTOR	2N2222A, NPN	762A672H15
R29	TRANSISTOR	2N2222A, NPN	762A672H15
R30	TRANSISTOR	2N2222A, NPN	762A672H15
R31	TRANSISTOR	2N2222A, NPN	762A672H15
R32	TRANSISTOR	2N2222A, NPN	762A672H15
R33	TRANSISTOR	2N2222A, NPN	762A672H15
R34	TRANSISTOR	2N2222A, NPN	762A672H15
R35	TRANSISTOR	2N2222A, NPN	762A672H15
R36	TRANSISTOR	2N2222A, NPN	762A672H15
R37	TRANSISTOR	2N2222A, NPN	762A672H15
R38	TRANSISTOR	2N2222A, NPN	762A672H15
R39	TRANSISTOR	2N2222A, NPN	762A672H15
R40	TRANSISTOR	2N2222A, NPN	762A672H15
R41	TRANSISTOR	2N2222A, NPN	762A672H15
R42	TRANSISTOR	2N2222A, NPN	762A672H15
R43	TRANSISTOR	2N2222A, NPN	762A672H15
R44	TRANSISTOR	2N2222A, NPN	762A672H15
R45	TRANSISTOR	2N2222A, NPN	762A672H15
R46	TRANSISTOR	2N2222A, NPN	762A672H15
R47	TRANSISTOR	2N2222A, NPN	762A672H15
R48	TRANSISTOR	2N2222A, NPN	762A672H15
R49	TRANSISTOR	2N2222A, NPN	762A672H15
R50	TRANSISTOR	2N2222A, NPN	762A672H15
R51	TRANSISTOR	2N2222A, NPN	7

1581C27G01

PART ITEM	PART NAME	DESCRIPTION	STYLE
AR	AR UNIT	1.6 OHM COIL, 10W, NA	906C845G9H4
10	CAPACITOR	.033 MFD, 100V, +-5% MET-POLY CARB	323HA68H06
11	CAPACITOR	.01 MFD 100V, +-5% MET-POLY CARB	323HA68H06
12	CAPACITOR	.1 MFD 100V, +-5% MET-POLY CARB	323HA68H08
13	CAPACITOR	1.0 MFD 100V, +-5% MET-POLY CARB	323HA68H08
14	CAPACITOR	100 MFD, 35V, +-20% TANTALUM	8603A35H01
DIODE			
11	DIODE	1N4818	188A342H06
CH	INT CKT	MC14023BAL TRIPLE 3 INPUT NAND	327A626H03
CS	INT CKT	MC1011BAL QUAD 2 INPUT NAND	327A09H02
CS	INT CKT	MC14066BAL QUAD BILATERAL SWITCH	327A09H06
03	JUMPER	0 OHM	862A478H01
04	JUMPER	0 OHM	862A478H01
DIODE			
ED3	DIODE	RED LED (EDGE MOUNT)	3508A22H01
ED4	DIODE	RED LED (EDGE MOUNT)	3508A22H01
TRANSISTOR			
9	TRANSISTOR	2N4904A PNP	762A672H17
10	TRANSISTOR	2N49VHIO NPN	3532A45H49
39	RESISTOR	51-K 1/4W 1/2W 1% METAL FILM	818A821H14
40	RESISTOR	10K 1/4W 1% METAL FILM	818A820H45
41	RESISTOR	51-K 1/4W 1% METAL FILM	818A822H11
42	RESISTOR	51-K 1/4W 1% METAL FILM	818A822H11
43	RESISTOR	51-K 1/4W 1% METAL FILM	818A821H14
44	RESISTOR	306-K 1/4W 1% METAL FILM	818A820H95
45	RESISTOR	51-K 1/4W 1% METAL FILM	818A821H14
46	RESISTOR	10K 1/4W 1% METAL FILM	818A820H45
47	RESISTOR	10K 1/4W 1% METAL FILM	818A820H45
48	RESISTOR	5.6K 1/4W 1% METAL FILM	818A820H21
49	RESISTOR	3.0K 1/4W 1% METAL FILM	818A819H54
50	RESISTOR	130 OHM 1/4W METAL FILM	818A819H48
51	RESISTOR	22-K OHM 25W +-5% WM	818A819H18
52	RESISTOR	15K 1/4W 1% METAL FILM	818A820H02
53	RESISTOR	15K 1/4W 1% METAL FILM	818A820H02
54	WIRE RELAY	.5 AMP DC PICKUP, FORM A	14WC626G01
55	WIRE RELAY	.5 AMP DC PICKUP, FORM A	14WC626G01

Figure 9a: Internal Schematic ARTM-1 and 2 Module

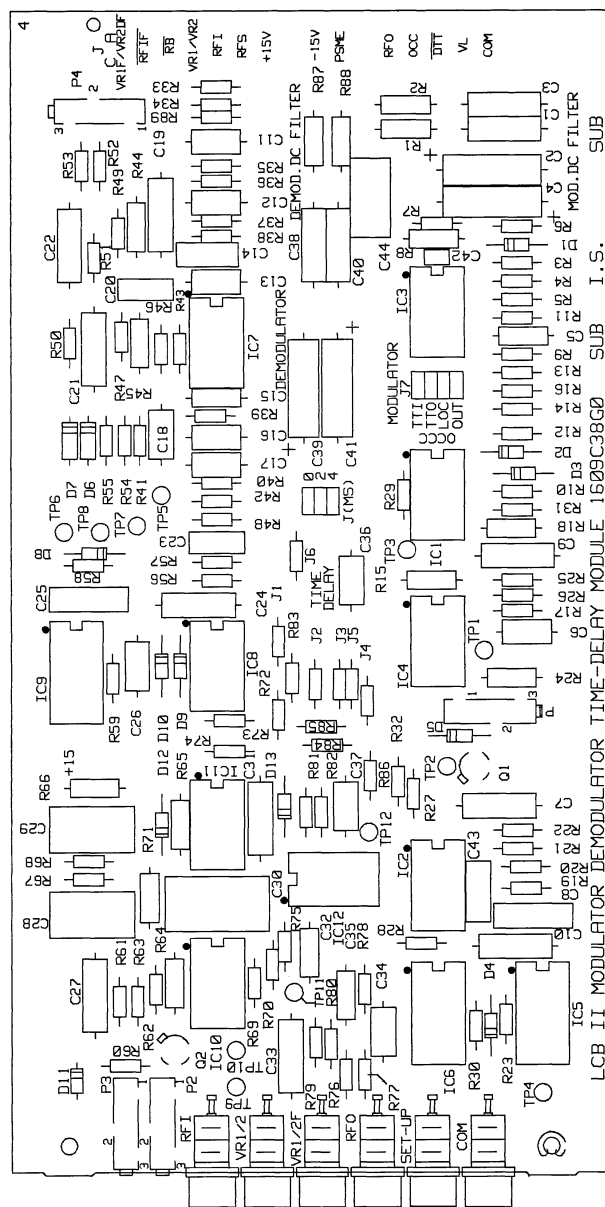
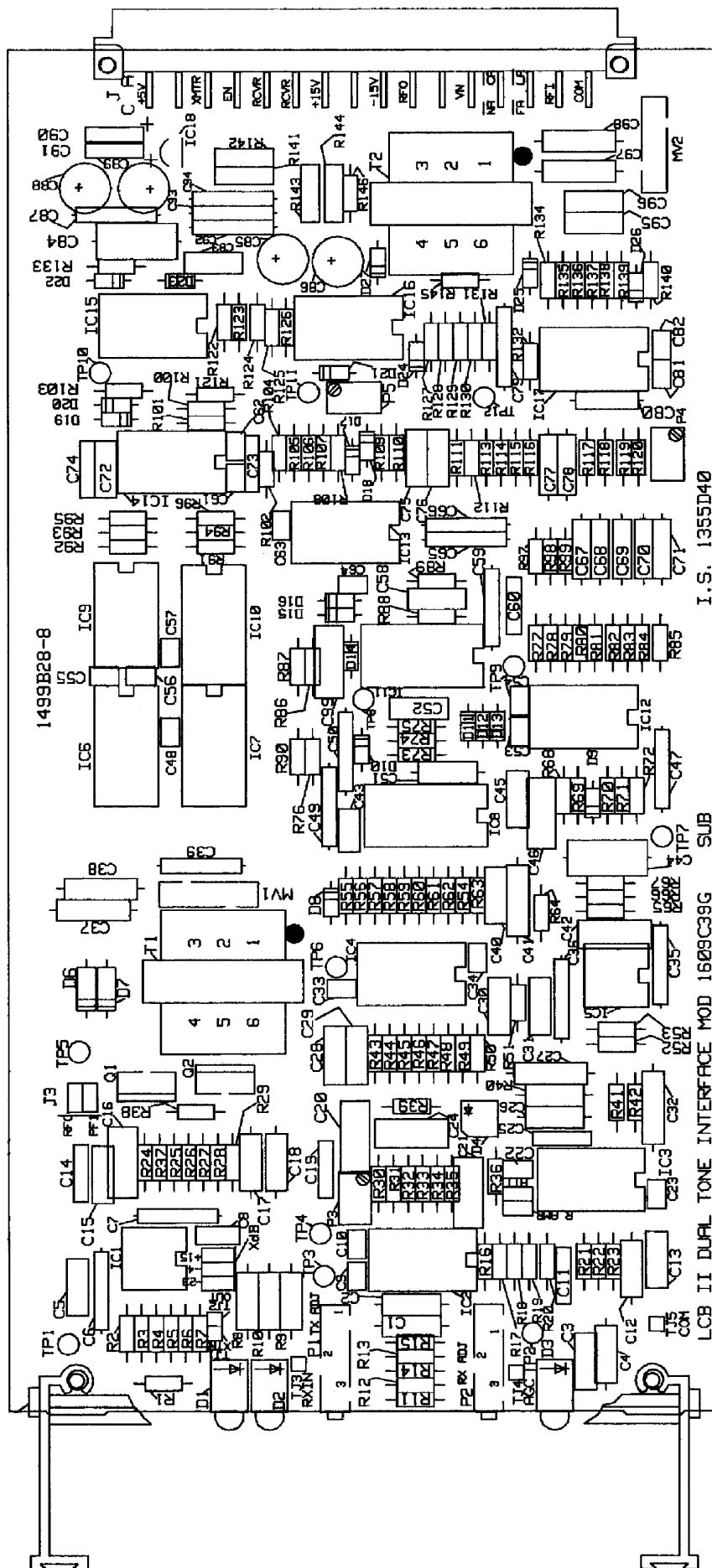
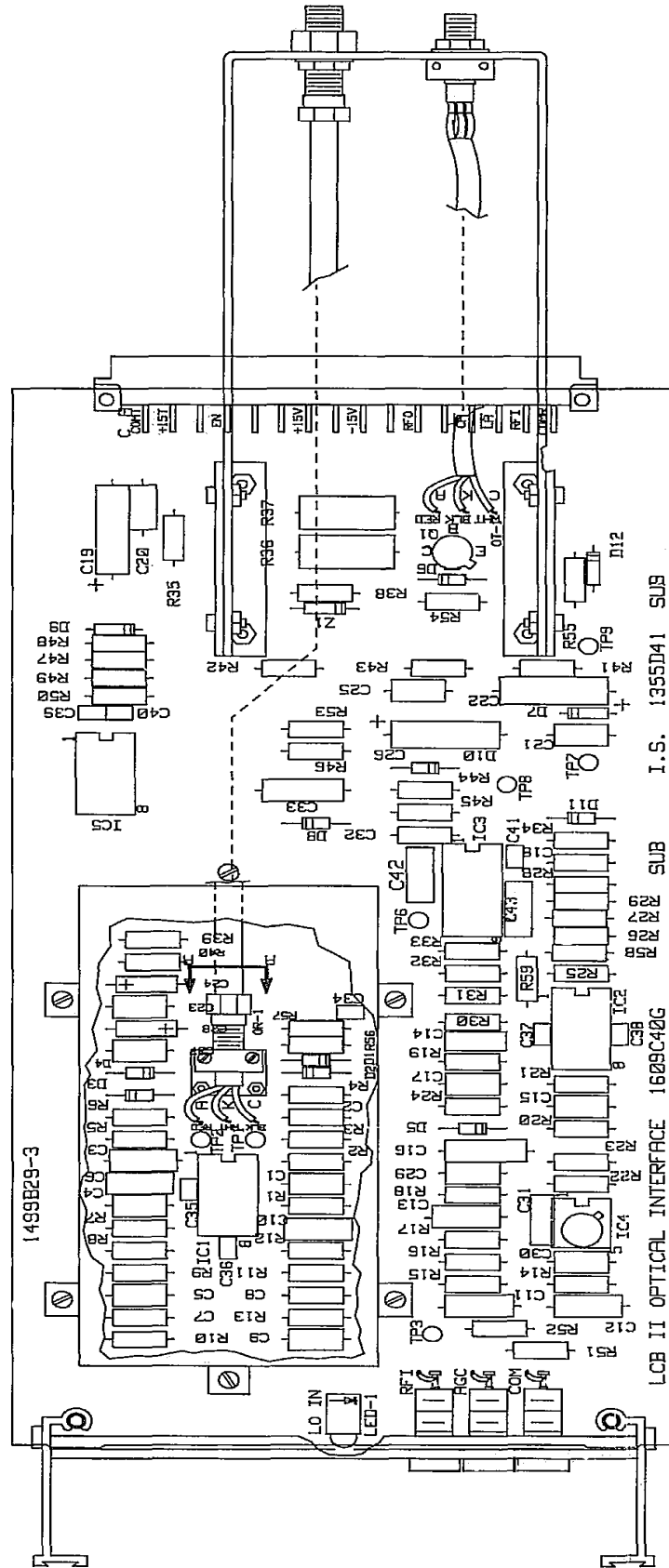


Figure 10: Component Location MD/DTD Module



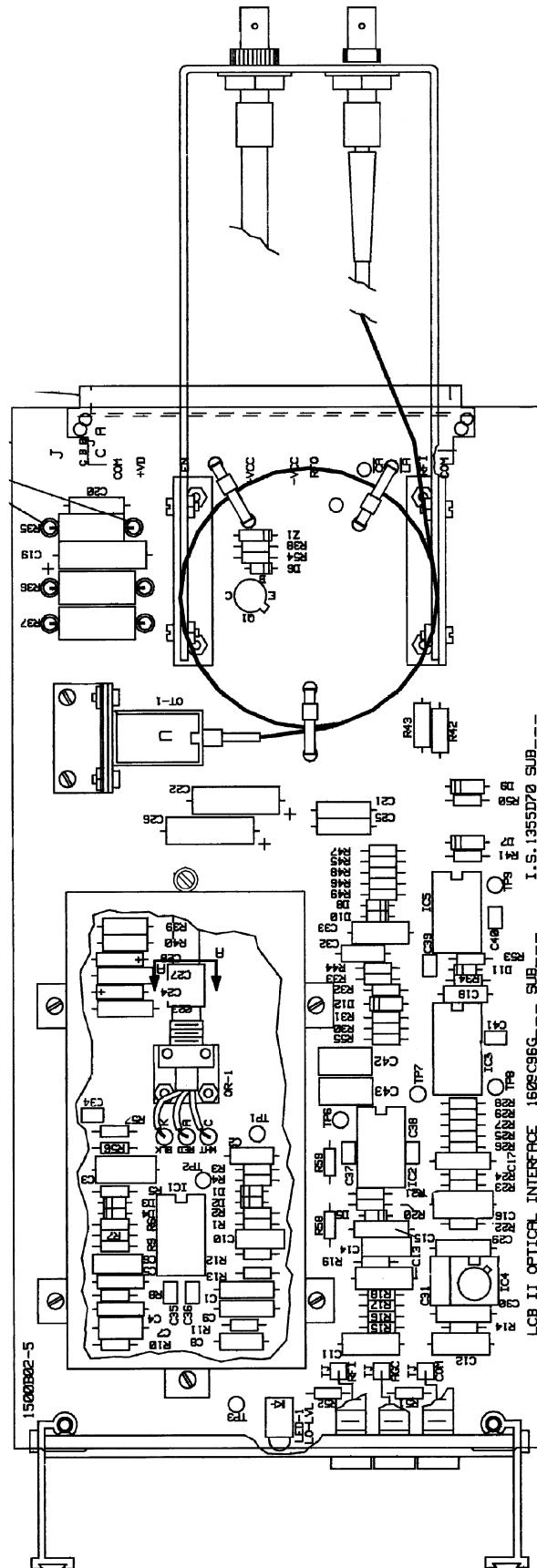
Sub 9
1609C39

Figure 11: Component Location IFDT Module



Sub 2
1499B44

Figure 12: Component Location IFO (Standard) Module



*Sub 12
1609C96

Figure 13: Component Location IFO (High Power) Module

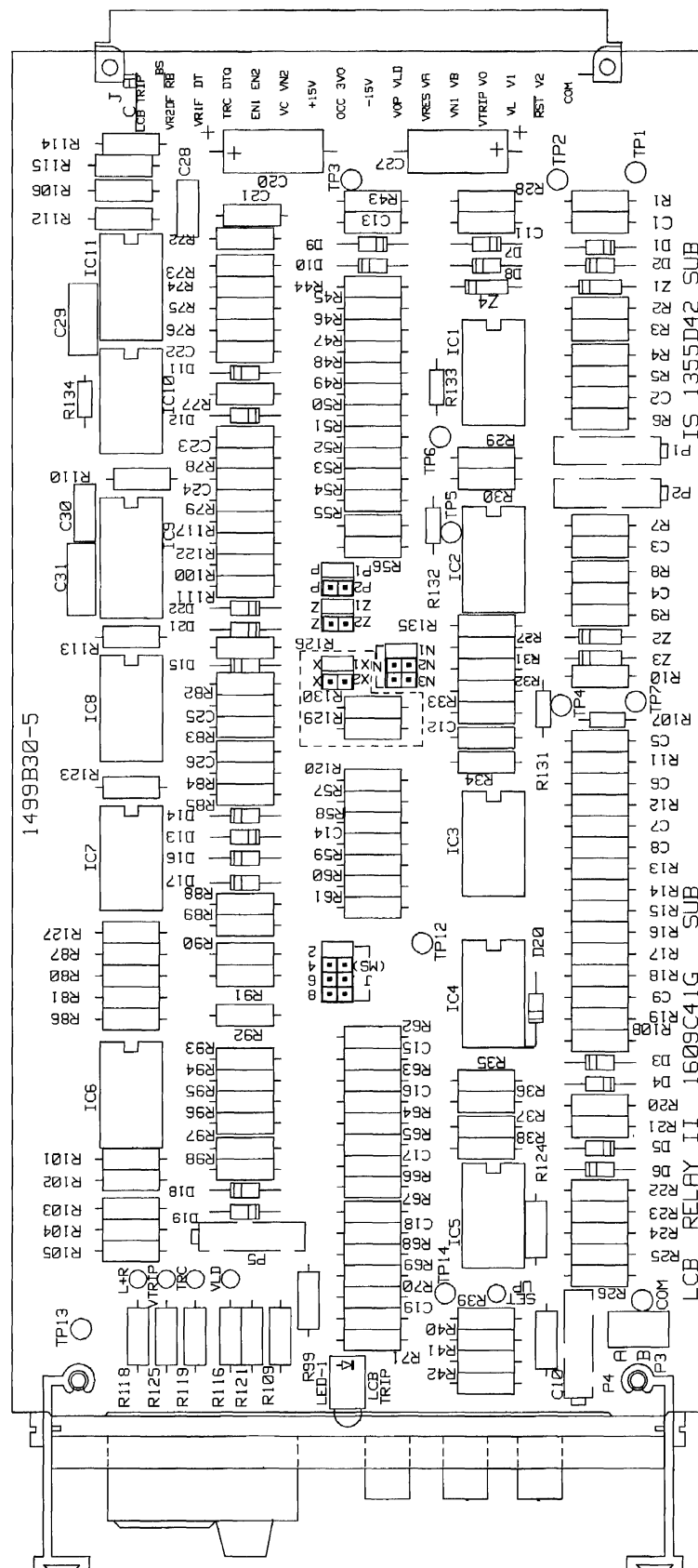
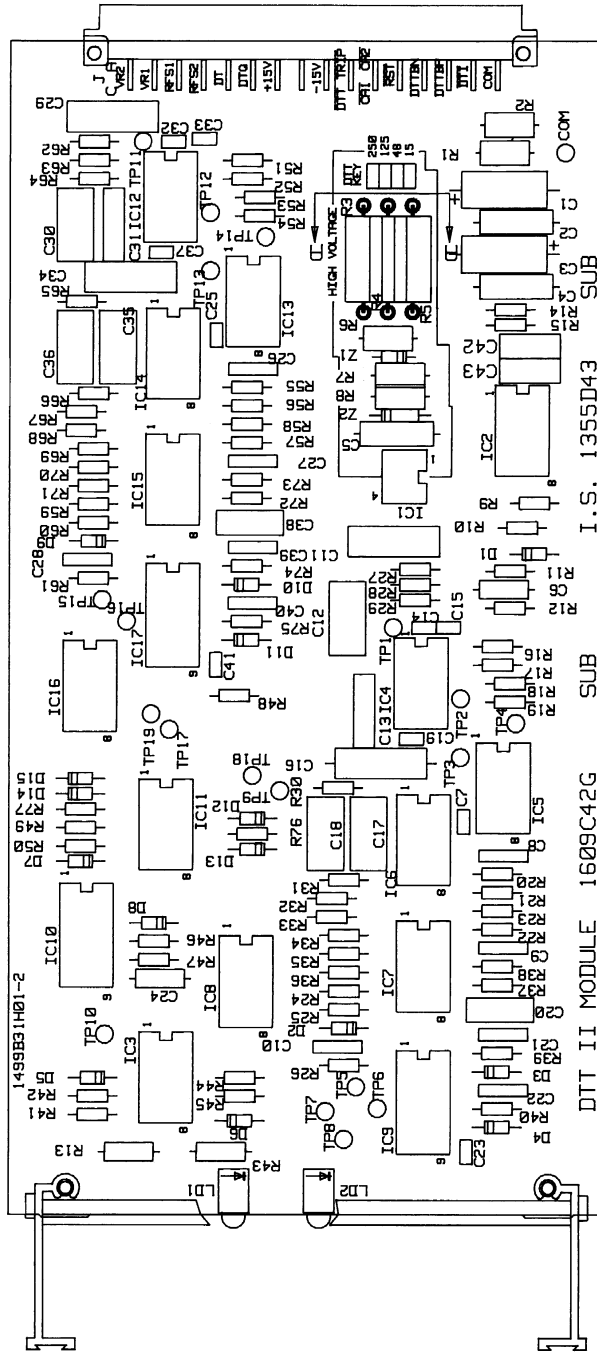


Figure 14: Component Location Relay Module



Sub 6
1609C42

Figure 15: Component Location DTT Module

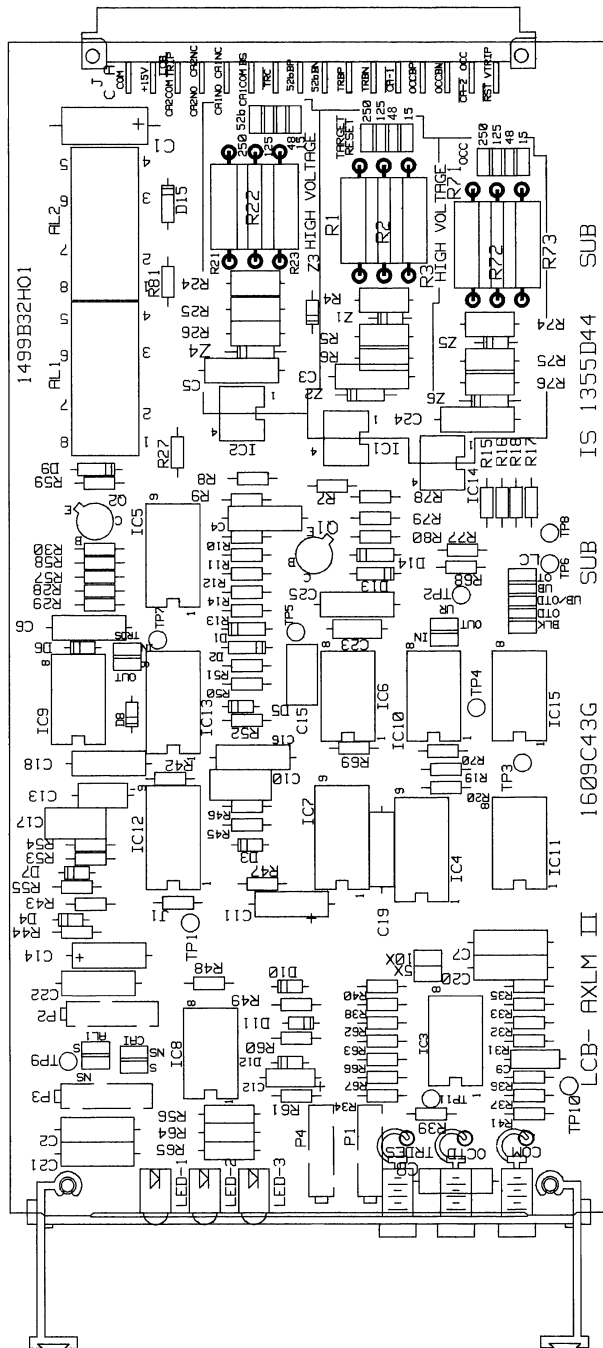
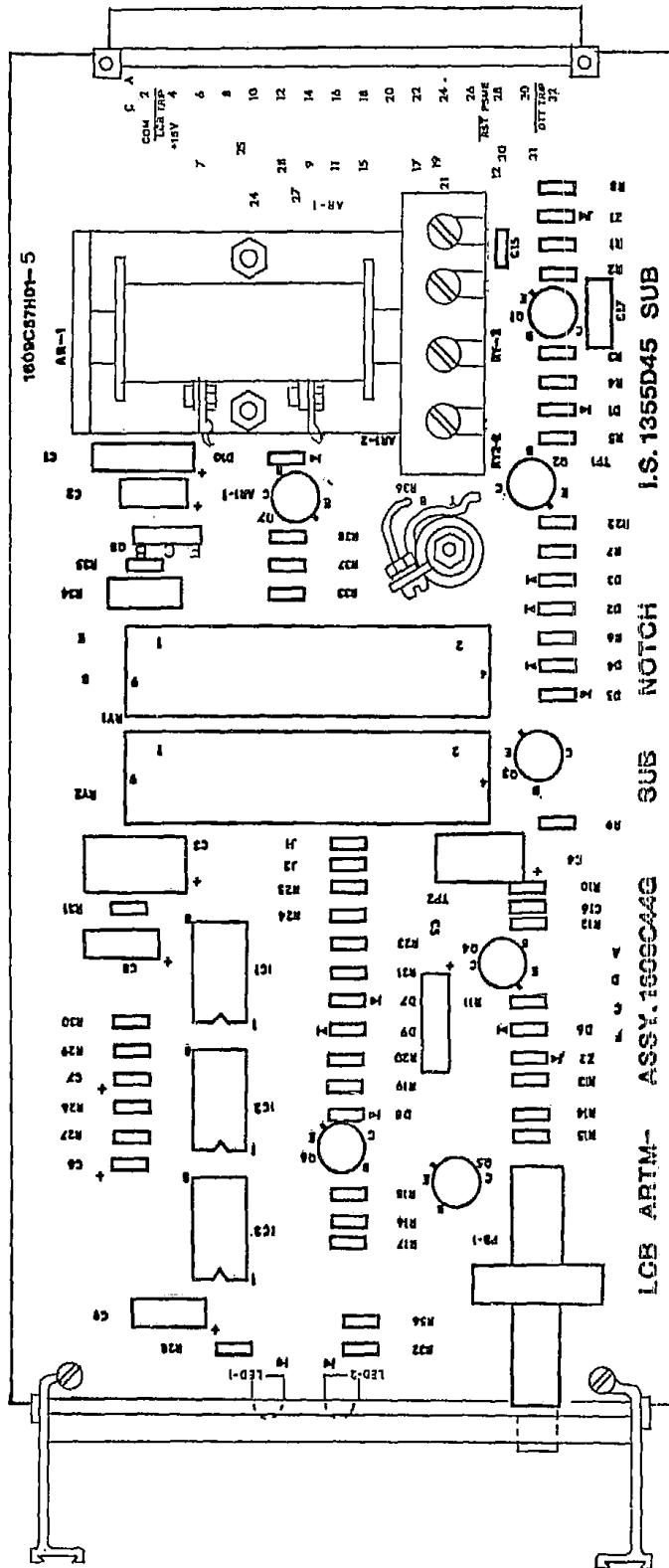


Figure 16: Component Location ALXM Module



Sub 2
1499B49

Figure 17: Component Location ARTM-1 Module

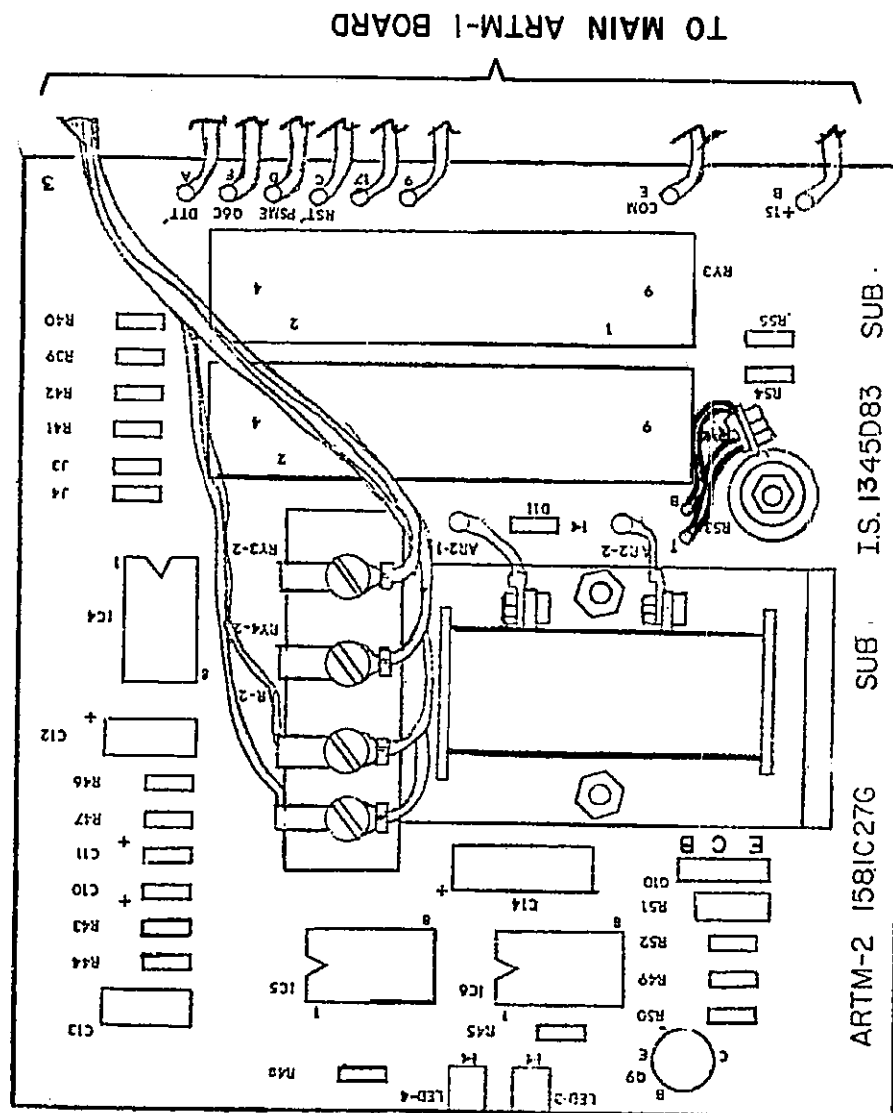


Figure 18: Component Location ARTM-2 Module

NOTES

