

**Measurement Business Division
Customer Service Document**

**Document Title: Service Introduction Plan
Revision**

**Product Name: TekMeter
THM550/560/565**

Written By:

Phone:

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Issue Date: August 16, 1996

Revision Level: D

Approval:

CSBU Engineering Manager: Signature: _____

REVISION LEVEL SUMMARY:

Revision Level A is the origination level for this document.

Revision #	Date	Initiator	Level Change		Description
			From:	To:	
1	01-05-95		A	B	Warranty period changes
2	02-13-95		B	C	Limited repair strategy
3	08-16-96		C	D	Module-level repair only

SERVICE IMPLEMENTATION PLAN REVISION

TEKMETER

THM500 SERIES: HANDHELD DMM / OSCILLOSCOPES

P.G. 3M

INTENT: To announce the change to the field support plan to worldwide service management. It contains information and instructions to implement the plan. All the Tektronix designated centers will act on this document to order required materials and equipment.

ORIGINATOR: MB Service Support

PRIMARY CONTACTS:

RESOURCE	NAME	DEL. STA.	PHONE	FAX
Product Marketing	Scott Mockry	39-525	(503) 627-3490	(503) 627-5622
Applications Support	Customer/Sales Support Center	48-300	(503) 627-2400	(503) 627-5695
Beaverton Exchange Center	Walter O'Dowd	78-593	(503) 627-4611	(503) 627-5553

I. PRODUCT SUPPORT SUMMARY

- THM500 SERIES PRODUCTS MAY BE SUPPORTED BY A MODULE/LIMITED COMPONENT LEVEL REPAIR ONLY. THERE WILL NO LONGER BE A PRODUCT-LEVEL REPLACEMENT STRATEGY. THE PREVIOUS "WHOLE PRODUCT" EXCHANGE UNIT HAS BEEN REPLACED BY ONE HIGH-LEVEL, NON-SERIALIZED MODULE ---> TO BE CALLED THE "MAIN MODULE ASSEMBLY"
- PRODUCTS SHOULD BE RETURNED TO A TEK SERVICE LOCATION FOR REPAIR OR ADJUSTMENT
- ALL WORLDWIDE TEK SERVICE LOCATIONS CAN SUPPORT THM 500 SERIES
- WARRANTY PERIOD WILL CONTINUE TO BE ONE YEAR, PLUS 3 MONTHS TO COVER DISTRIBUTOR "SHELF LIFE"
- LONG TERM PRODUCT SUPPORT PERIOD IS THREE YEARS
- THE THM570 STRATEGY DOES NOT CHANGE AT THIS TIME, BUT WILL BE ADDRESSED IN THE FUTURE

II. PRODUCT DESCRIPTION

The TekMeter Series, THM550, THM560, THM565 combine a True RMS Digital Multimeter and 25 MS/Sec Digital Storage Oscilloscope in a lightweight (1 kg) rugged, battery powered unit.

III. REQUIREMENTS FOR SUPPORTING THM500 SERIES

1. P/N 070-8951-xx, Performance Verification manual
2. P/N 067-1446-99, Test Fixture, required for adjustment, F/W updates
3. P/N 063-1815-xx S/W disk used for F/W code, code reburn, adjustment procedure, cal constant reload, resetting # of calcs counter.

IV. SERVICE STRATEGY DETAILS

A. Service Method

THM500 Series products will now be supported with a Module-level replacement strategy.

If the highest level exchange method is used, the new exchange modules (MAIN MODULE ASSEMBLY) will NO LONGER have the "Replacement For THMxxx S/N xxxxxxx" tag added to the product label by the Service Center. The new 119-470x-50 modules will be shipped WITHOUT the normal rear panel. Instead, a new "shipping cover/label" has been devised to ship with the MAIN MODULE ASSEMBLY. This MAIN MODULE ASSEMBLY contains most of the product, but is missing the banana connectors, and all rear panel access locations are sealed over.

B. Service Locations

All Tek world-wide service locations currently supporting oscilloscopes and DMMs have the capability to repair or exchange the modules and accomplish the performance verification with existing test equipment.

C. Customer "Return for Service" Procedures

The Tektronix warranty policy states: "The customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid".

The authorized distributors are intended as sales channels only and are not intended to provide replacement products from their own inventory. **A customer or distributor must return the defective product to an authorized Tektronix Service point to be repaired by Tek Service.**

D. Service Center Procedures

There is now only one main method of servicing available for the Tekmeter products: **Module / limited component level replacement. THERE WILL BE NO PRODUCT LEVEL EXCHANGE AVAILABLE.** The Service Center may choose to service the product at the limited component level first, and possibly move to the "MAIN MODULE ASSEMBLY", if necessary. Or, the Service Center may elect to use the highest level module replacement level first (MAIN MODULE ASSEMBLY - 119-470x-50). The latter method is suggested in centers where the Main Module Assembly is readily available. Both procedures follow:

HIGHEST-LEVEL REPLACEMENT - SUGGESTED METHOD:

This methodology of replacing the defective MAIN MODULE with a MAIN MODULE ASSEMBLY will use standard Tek Service Exchange procedures. The labor for evaluating the problem along with the Exchange P/N should be recorded on the job record.

1. The Tektronix Service Center will open a job record for the product and log it into the job queue just like any service job.
2. The product should then be evaluated to determine whether it is electrically or mechanically defective. The troubleshooting checklist section of the User manual, the diagnostics section of the Utilities menu, and the Performance Verification document all provide methods for verifying operation.
3. Complete information on symptoms and failure modes found are to be entered on the job record.
4. If it is found that there is a failure, and it is NOT located on the back chassis assy (a banana jack failure, for example), order a MAIN MODULE ASSEMBLY from the Exchange Center.

When the MAIN MODULE ASSEMBLY arrives, remove the fluorescent green-labeled back panel marked "SHIPPING PACKAGE FOR ELECTRONIC COMPONENT PROTECTION ONLY!" Remove the back panel from the defective THM5XX unit, taking care to note which wire/resistor goes to its respective banana jack, as it is de-soldered. Assemble the "Shipping panel" onto the defective module. Attach the original (serial-numbered) back panel to the new exchange module by soldering each of the banana jacks to their respective circuit board wire/resistor. Return the defective MAIN MODULE ASSEMBLY back to the Exchange system.

Reinstall the batteries into the new unit that were removed from the defective THM500 unit, if necessary.

The front panel of the defective MAIN MODULE ASSEMBLY should also be inspected for customer Asset tags. On modules being replaced, remove the tags and return with the replacement product.

The defective MAIN MODULE ASSEMBLY is shipped to the Beaverton Exchange Center.

LIMITED COMPONENT REPLACEMENT:

All technical documentation for this new method of repair for the TekMeter series is contained in this section, and in the "TekMeter Parts List" Attachment at the end of this SIP. This is the only documentation available for this level of repair. There will be no Service Manual. THIS LEVEL OF REPAIR IS ONLY AVAILABLE TO TEKTRONIX SERVICE CENTERS.

1. The Limited Component Level strategy may be chosen to best support a customer. If the technician finds that the part needed to repair the product is one that is not available, he or she will revert back to the highest level (MAIN MODULE ASSEMBLY) replacement strategy. It has been determined that the parts that have been made available for limited component/module repair shall satisfy the majority of known TekMeter failures. It is possible that some parts may be added or removed from the available replaceable parts list in the future.

Due to the nature of this product, there should be very little time spent "troubleshooting". There will be no schematics or theory of operation provided. The following information, and the MPL in the "TekMeter Parts List" Attachment will be all that is provided.

2. Currently, the Main board "Sandwich" and Backlight board are the two parts that are not available for individual replacement. However, the three highest failure parts for the Main Board have been made replaceable.

All three of the Main board replaceable parts are surface-mounted (50 mil spacing). To replace these parts, a surface-mount soldering station will be required. Service Centers not already owning a surface-mount de-soldering/soldering station will need to purchase one, if this level of TekMeter support is desired. Hot Air Leister/Hakko/Weller Systems are sufficient.

3. Failure Modes of Main Board parts (Both component numbers and Pin 1 indexes are silk-screened on the boards.):

U604 & U605 - +/- 5 volt regulators. If the unit will not power up, these 8-pin 156-6672-01 ICs have been the major failure parts. Replace both at the same time. If this fails to repair the problem, revert to instrument level replacement strategy.

U304 - During firmware reburn, some units have had the 32-pin Flash ROM 'lockup'. There is no way to "clear" the memory. Replace with 160-9615-00 for THM550/560/565 units, and 160-9616-00 for THM570 units. Reburn code to latest version. If this fails to repair the problem, revert to MAIN MODULE ASSEMBLY replacement strategy.

F. FIRMWARE UPDATES:

If it should become necessary, the firmware will be updated by using the following items:

- Test fixture (See list on page 3)
- S/W disk containing latest version of firmware/reburn program.
- Personal Computer

G. FIELD REPLACEABLE PARTS:

Customer:

- | | |
|--------------------|-----------------|
| Protective bumpers | P/N 348-1344-xx |
| Battery door | P/N 200-4101-xx |
| Standard probe set | P/N 012-1447-xx |

Tek Service:

See Attachment "A". Attachment "A" does not reference the changes to the "whole cabinet assy". The cabinet (or case) was separated into two replacement parts for the THM560/565:

- | | | |
|------------|--------------------|-----------------|
| THM560 | 390-1161-00 Bottom | 390-1162-00 Top |
| THM565 | 390-1161-00 Bottom | 390-1162-00 Top |
| THM550 *** | | |

***THM550 Case was not separated. Part number stays 390-1128-00 for whole case.

The attachment also does not reference the new MAIN MODULE ASSY part numbers. The new MAIN MODULE ASSY Part Numbers are:

- | | | |
|--------|-------------|--------------|
| THM550 | 119-4702-50 | \$275.00USDC |
| THM560 | 119-4703-50 | \$275.00USDC |
| THM565 | 119-4704-50 | \$275.00USDC |

In addition, the -10 "out of warranty replacement units" are no longer available. The -50 modules will be used in all cases.

H. CALIBRATION ISSUES:

If a customer's complaint pertains to a Calibration or Performance Verification problem, the product should be tested to see if calibration will correct the problem or whether a failure has occurred.

ACTION:

The specification in question should be checked using the PV procedure. If not within the specification, the calibration procedure should be performed. If the problem is corrected, then the product should be returned to the customer. If necessary, the Service Center shall verify that the customer was properly using the product. If the problem cannot be corrected, then the product should be repaired.

L. Warranty Statement

The product warranty will be Corporate Warranty # 2: one year coverage of all components and labor. Standard accessory probes are covered by 3 month warranty. Optional accessories are also covered by a 3 month warranty.

M. Phase Out

The Long Term Product Support period for the THM500 products will be 3 years after the last Manufacturing output of the product.

V. SUPPORT REQUIREMENTS - U.S. and INTERNATIONAL

A. Main Module Exchange

To obtain a MAIN MODULE ASSEMBLY replacement (in warranty, or out of warranty) order the following P/N:

Product	Exchange MAIN Assy P/N	Exchange Price
THM550	P/N 119-4702-50	\$ 275.
THM560	P/N 119-4703-50	\$ 275.
THM565	P/N 119-4704-50	\$ 275.

C. Procedures for Calibration/Performance Verification

Calibration by customers will not be supported. Products will have to be returned to Tektronix for calibration.

A separate Performance Verification procedure is available for Tek Service and customer use. The part number is 070-8951-xx.

All Tek Service locations can use the manual adjustment method, that is included on the S/W Disk, pn 063-1815-03. A new ScopeCal option, when available, may also be used.

Certification and test data reports will be available from Tek Service Centers.

D. Test Equipment Requirements:

Procedure	Test Equipment
Adjustment / PV	Fluke 5100B (Fluke 5700A)
	SG503 or SG5030 or Equivalent
	FG501A or FG5010 or Equivalent
	067-1446-99
	PC Controller w/GPIB & RS-232
	S/W Disk, P/N 063-1815-xx (for adjustment procedure).
Performance Verification	Fluke 5100B or Equivalent
	SG503 or SG5030 or Equivalent
	FG501A or FG5010 or Equivalent
	067-1446-99 (Power Source) or equivalent alternative power source
	Customer: Use Scope Batteries, THM5AC, or THM5COM1.
	PV manual P/N 070-8951-xx

E. Reliability Evaluation

Service Centers will enter failure information on the Service Repair Record (Paper or Electronic).

F. Manuals

THM500 Series products will have a User manual providing a very brief list of troubleshooting steps to assist in verifying product failures. It also contains a very limited number of user replaceable item part numbers. The Manual P/N is 070-8840-xx for the THM550/560/565.

A separate part numbered Performance Verification document is also available for Tek Service and customers. The P/N is 070-8951-xx.

All documentation to support the LIMITED Component/Module Level Strategy is contained in the Attachment to this SIP. Copies of this SIP should be filed with other TekMeter service documentation.

VI. SERVICE PRICING

U.S. Service Offerings

Performance Verification Times:	
Interval	1 Year
Using Service Manual	0.50 hr
Using ScopeCal	.25 hrs
Adjustment Times:	
Using Service Manual	.50 hrs
Using ScopeCal	.25 hrs
Repair Times (to service level)	
Fault Isolation	0.25 hr
Removal/Replacement	0.5 hr
Reliability Goal (%)	2.5%

SERVICE PRICING:

THM550			
C2	\$ 90.00	AC2	\$ 75.00
R2	\$ 260.00	AR	\$ 50.00
C2R	\$ 320.00	AC2R	\$ 120.00

THM560			
C2	\$ 90.00	AC2	\$ 75.00
R2	\$ 280.00	AR	\$ 50.00
C2R	\$ 345.00	AC2R	\$ 120.00

THM565			
C2	\$ 90.00	AC2	\$ 80.00
R2	\$ 305.00	AR	\$ 60.00
C2R	\$ 370.00	AC2R	\$ 130.00

Service Assurance Pricing

THM550	REP4100	CAL4100
THM560	REP4100	CAL4100
THM565	REP4100	CAL4100

APPENDIX "A"

Replaceable Parts

This section contains a list of the replaceable parts for the TekMeter Series. Use this list to identify and order replacement parts.

TekMeter Parts List

Manufacturers Cross Index

Mfr. Code	Manufacturer	Address	City, State, Zip Code
TK0IU	OPTREX CORPORATION	3-14-9 YUSHIMA, BUNKYO-KU TOKYO	113 JAPAN
TK1151	QUALITY PLASTIC INC	2101 CRESTVIEW DR PO BOX 740	NEWBERG OR 97132-9518
TK1918	SHIN-ETSU POLYMER AMERICA INC	1181 NORTH 4TH ST	SAN JOSE CA 95112
TK2469	UNITREK CORPORATION	3000 LEWIS & CLARK WAY SUITE #2	VANCOUVER WA 98601
0KB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039-2410
2K262	BOYD CORP	6136 NE 87TH AVE PO BOX 20038	PORTLAND OR 97220
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001
85471	BOYD CORP	13885 RAMOMA AVE	CHINO CA 91710

Replaceable Parts List

Fig. & Index	Tektronix Part Number	Serial No. Effective	Serial No. Discont'd	Qty	Name & Description	Mfr. Code	Mfr. Part Number
1-1	390-1126-00			1	CABINET,ASSYTOP & BOTTOM,MILE,BLACK, 4 BANANA JACKS AND PAD PRINTED TEXT (THM560/565 ONLY)	TK1151	ORDER BY DESC
	390-1128-00			1	CABINET ASSY:TOP & BOTTOM,BLACK,3 BANANA JACKS AND PAD PRINTED TEXT (THM550 ONLY)	TK1151	390-1128-00
	390-1147-00			1	CABINET ASSY:TOP & BOTTOM,BLACK,4 BANANA JACKS AND PAD PRINTED TEXT (THM570 ONLY)	TK1151	390-1147-00
-2	348-1344-00			4	PAD,CUSHIONING:CORNER,BLACK	TK1151	ORDER BY DESC
-3	260-2586-00			1	SWITCH,ELAST:4 BUTTON CARBON CONTACTS	TK1918	260-2586-00
-4	260-2587-00			1	SWITCH,ELAST:8 BUTTON,CARBON CONTACTS	TK1918	260-2587-00
-5	259-0088-00			1	FLEX CIRCUIT:SWITCH,CARBON CONTACT	07416	ORDER BY DESC
-6	343-1539-00			1	RTNR,CHASSIS:BLACK	TK1151	ORDER BY DESC
-7	337-3906-00			1	SHIELD,DISPLAY:POLYCARBONATE,CLEAR	85471	ORDER BY DESC
-8	119-5042-00			1	DISPLAY,MODULE:,LCD;256 X 128,DOT MATRIX (THM550/560 ONLY)	TK0IU	DMF682AN
	119-5043-00			1	DISPLAY,MODULE:,LCD;256 X 128,DOT MATRIX (THM565 ONLY)	TK0IU	DMF682AN-SEW12
-9	212-0158-00			4	SCREW,MACHINE:8-32 X 0.375,PNH,STL,T-20	0KB01	ORDER BY DESC
-10	337-3954-00			1	SHIELD,ELEC:0.015 THK AL FOIL-VALOX LAMIN	80009	337395400
-11	_____			1	CKT BD SUBASSY:MAIN (THM550 ONLY)		
	_____			1	CKT BD SUBASSY:MAIN (THM565 ONLY)		
	_____			1	CKT BD SUBASSY:MAIN (THM560 ONLY)		
	_____			1	CKT BD SUBASSY:MAIN (THM570 ONLY)		
-12	337-3918-00			1	SHIELD,ELEC:0.015 THK AL FOIL-VALOX LAMIN	2K262	337-3918-00
-13	_____			6	BATTERY: (ALKALINE OR LONG-LIFE NiCd RECOMMENDED)		
-14	200-4101-00			1	DOOR,ACCESS:ASSY,BLK,W/SCR/BATT CLIP	TK1151	ORDER BY DESC
-15	344-0485-00			2	CLIP,BATTERY:CA ASSY,W/3.75 L 24 AWG WIRE	TK2469	ORDER BY DESC
-16	_____			1	CKT BD ASSY:BACKLIGHT (THM565/570 ONLY)		
-17	211-0304-00			4	SCR,ASSEM WSHR:4-40 X 0.312,PNH,STL,T-9	0KB01	ORDER BY DESC

THM550/560/565/570

3

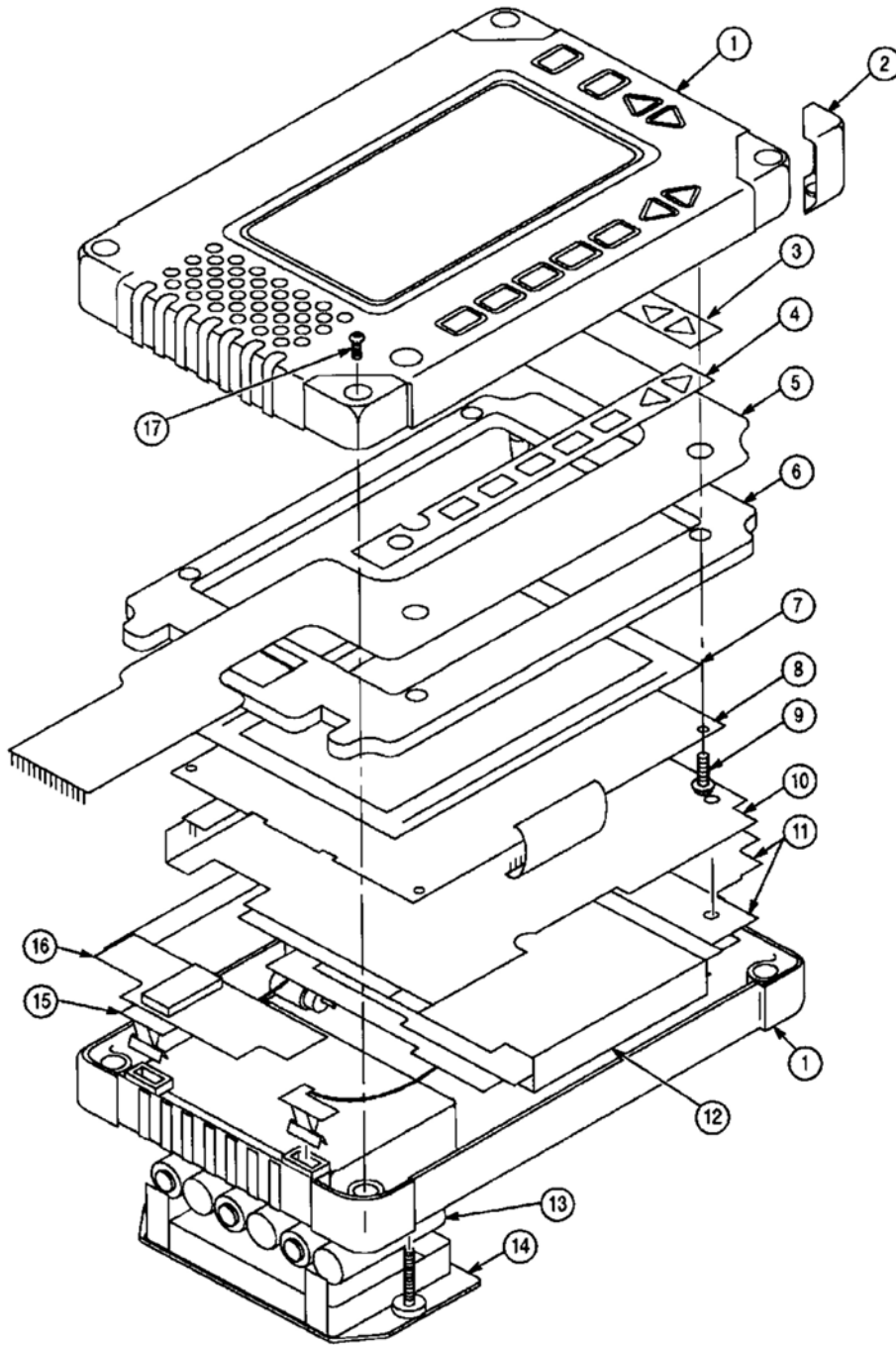


Figure 1: Exploded View

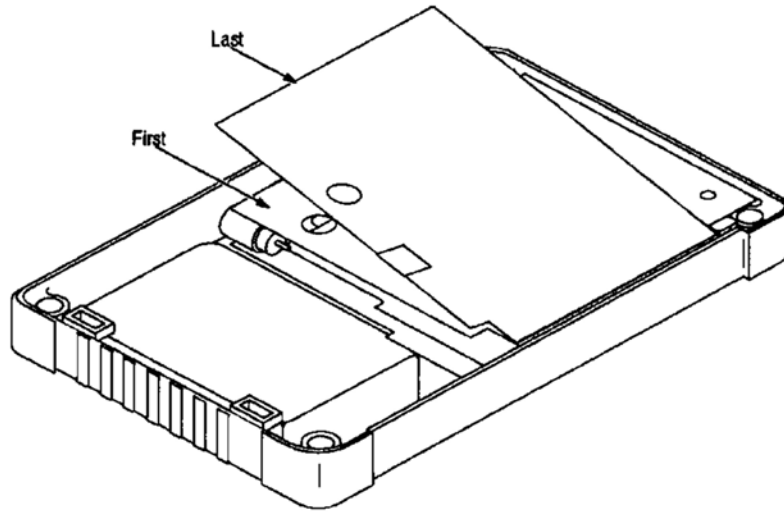


Figure 2: Shield Folding Sequence

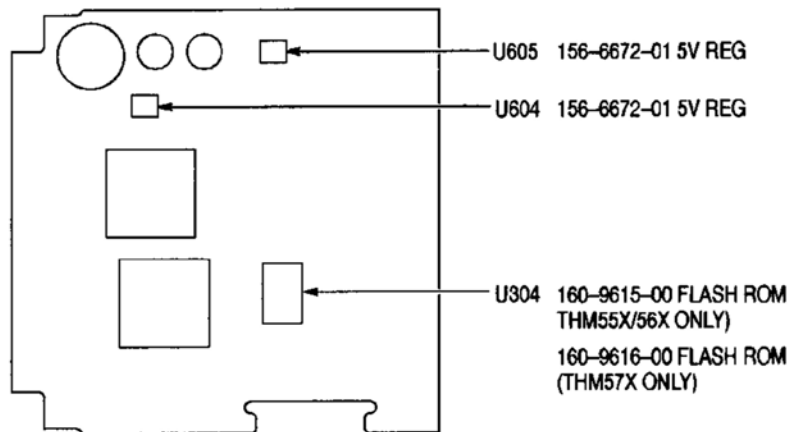


Figure 3: Main Bd