Chapter 9

Appendix

4822 872 28033 rev. 01 931122

How to Replace Surface Mounted Devices

Most of the components in this instrument are mounted on the surface of the board instead of through holes in the board. These components are not hard to replace but they require another technique. If you do not have special SMD desoldering equipment, follow the instructions below:

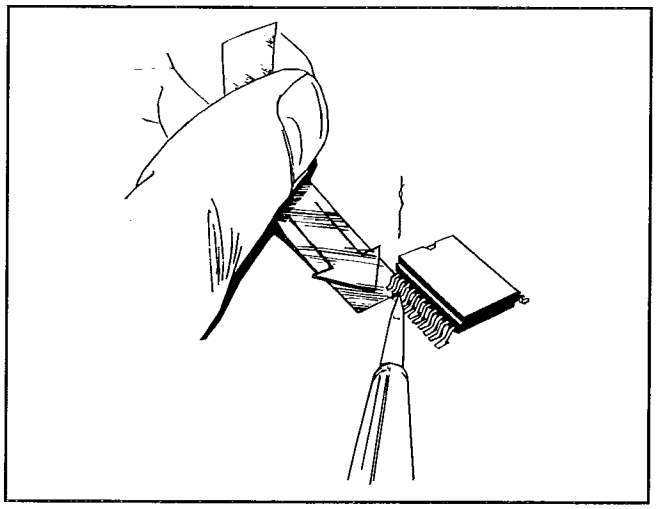


Figure 9-1 *Heat the leads and push a thin aluminum sheet between the leads and the pca.*

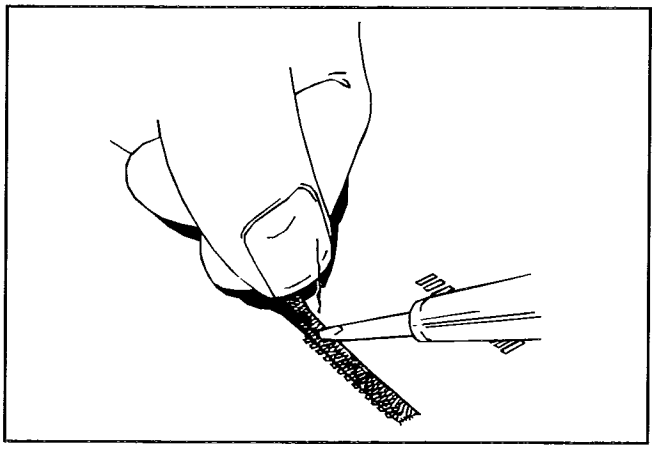


Figure 9-2 *When removed, clean the pads with desoldering braid.*

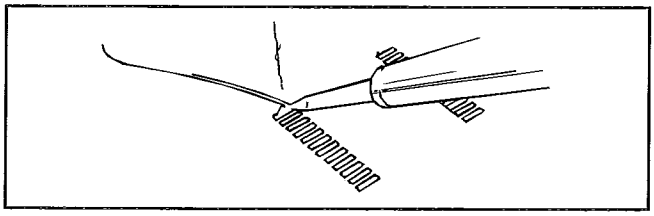


Figure 9-3 *Place solder on the pad.*

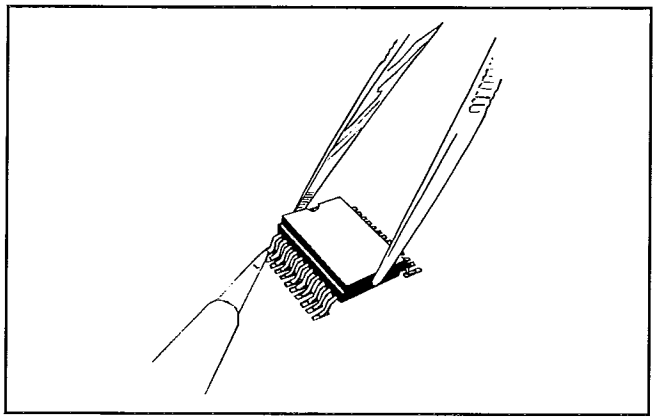


Figure 9-4 *Attach the IC to the pad with solder.*

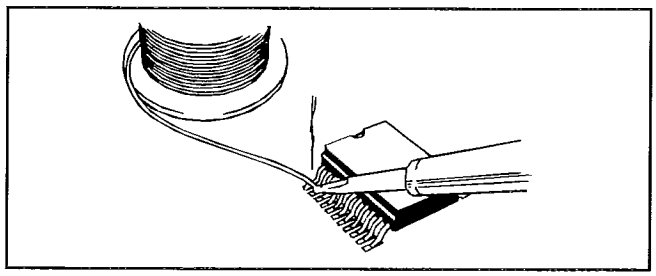


Figure 9-5 *Solder all leads with plenty of solder, don't worry about short-circuits at this stage.*

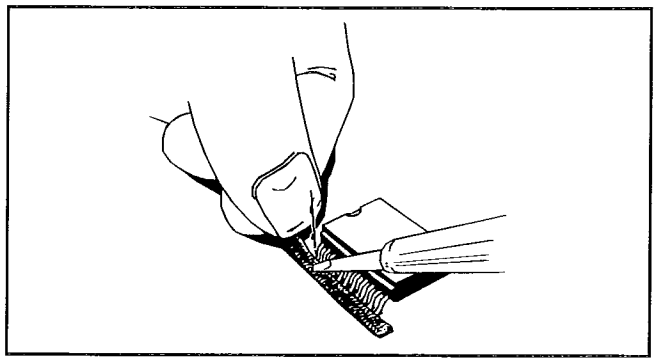


Figure 9-6 *Remove excessive solder with desoldering braid..*

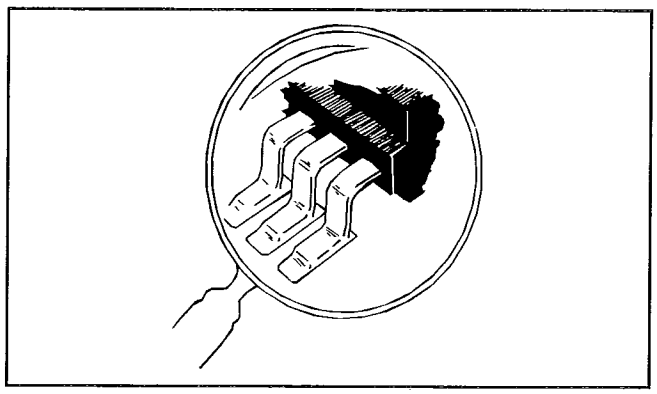
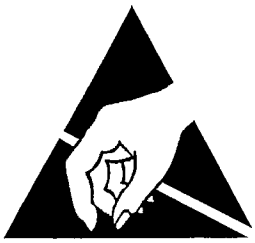


Figure 9-7 *Use a strong magnifying glas to make sure there are no short/circuits or unsoldered leads.*

Electrostatic discharge



Almost all modern components have extremely thin conductors and metal oxide layers. If these layers are exposed to electrostatic discharge they will break down or perhaps even worse, be damaged in a way that inevitably will cause a breakdown later on. The Electro-Static Discharge sensitivity of MOS and CMOS semiconductors have been known quite a while, but nowadays bipolar semiconductors and even precision resistors are ESD sensitive. **Consider therefore all components, pc-boards and sub-assemblies as sensitive to electrostatic discharge.** The text below explains how you can minimize the risk of damage or destroying these devices by being aware of the problems, and learning how to handle these components.

ESD sensitive options are packed in conductive containers marked with this symbol.

- Never open the container unless you are at an ESD protected work station.
- Use a wrist strap grounded via a high resistance.
- Use a grounded work mat on your workbench.
- Never let your clothes come in contact with ESD sensitive equipment even when you are wearing a grounded wrist strap.
- Never touch the component leads.
- Never touch open connectors.
- Use ESD-safe packing materials.
- Use the packing material only once.
- Keep paper and nonconductive plastics etc. away from your workbench. These may block the discharge path to ground.

Glossary

A	
ASIC	Application Specific Integrated Circuit
ASMTC	Assistant Super Mutifunction Timer Counter circuit
C	
Calibration Adjustments	How to restore an instrument to perform in agreement with its specifications
CSA	Canadian Safety Association safety standard.
G	
GaAs	A technique to make very fast ICs using Gallium Arsenide substrat.
GPIB	General Purpose Instrumentation Bus used for interconnecting several measuring instruments to a common controller.
I	
I^2C-bus	An internal address- and data bus for communication between microcontroller, measuring logic, and options.
IEC 1010-1	International Electrical Commission safety standard.
L	
LSI	Large Scale Intergarated circuit
P	
PCA	Printed Circuit Assembly
Performance Check	A procedure to check that the instrument is functionally operational and performs to its specification. Must not require opening of cabinet. If the instrument passes the check it is considered as calibrated.
PWM	Pulse Width Modulated
S	
SMTC	Super Mutifunction Timer Counter circuit
T	
TCXO	Temperatur Controlled X-tal Oscillator

Power Supply

Introduction

A new power supply is replacing the old power module in the PM 6680 and PM 6685 Counters. This appendix describes the new power supply and the neccesary changes that have to be done in the counter when replacing an old power module with the new one.

Compability

The PM 6680 Timer/Counter must have a program version 1.04C or later to work correctly with this power supply.

In the counter is eqipped with a GPIB the program version for the GPIB should be 1.13C.

The program versions can be identified by the label placed on IC 111 placed on the main PCA, and IC 109 placed on the GPIB PCA.

If the instrument is working the program versions can be checked as follows:

- Press AUX MENU.
- Press SELECT/SET until the display shows Prod. Idn.
- Press ENTER.
- The display shows Instr. Ixx, where xx should be 04 or higher.
- Press ENTER.
- The display shows bUS Ixx, where xx should be 13 or higher.

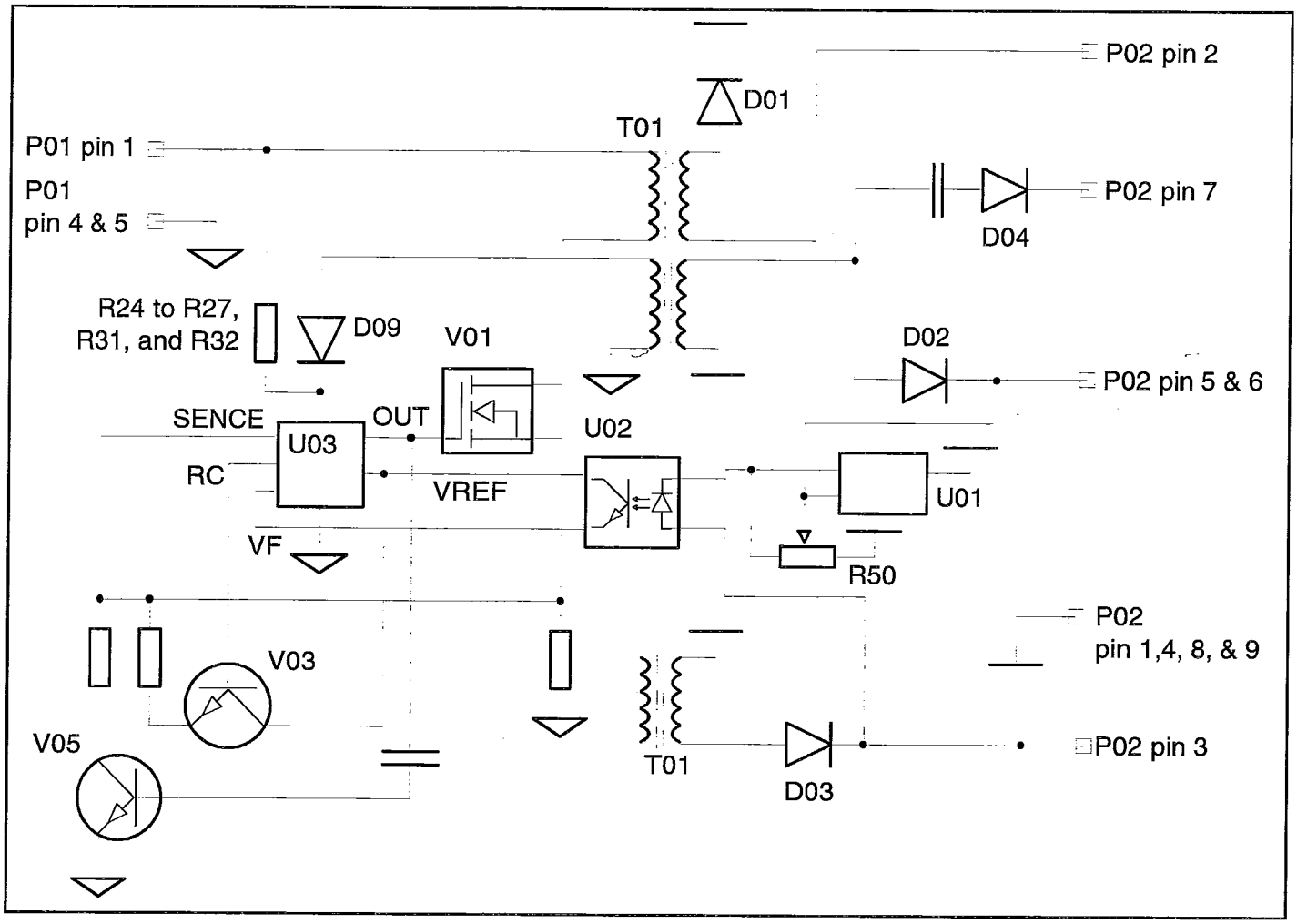


Figure 9-8 *Power supply primary circuits.*

Circuit Descriptions

• *Primary Circuits*

For primary circuits outside the Power Supply module, see Chapter 4, Circuit Descriptions, Power Supply.

The Power Supply module generates three DC voltages to the secondary circuits.

R24 to R27, R31, and R32 gives the start up voltage to the control circuitry U03. U03 outputs a frequency of 120 kHz on OUT (pin 10) to the switch transistor V01. When the switch transistor has started U03 will be supplied from the transformer T01 pin 3 via the diodes D09.

Every switch pulse causes a voltage drop over the resistors R35 to R37 and R55. This voltage feeds the SENSE input (pin 5) of the control circuit U03. When the voltage has reached the internal reference level in U03, the switch transistor V01 is turned off.

V05 is a blanking transistor that will compensate for high transients generated by the transformer T01.

The internal sawtooth generator RC (pin 7) in U03 is connected to the SENSE input via V03, to compensate for low load.

The regulated +5 V is senced by U01 and adjusted by R50. The output of U03 is connected to the VF input (pin 3) of U03 via the opto coupler U02.

The VREF pin (pin 14) outputs a reference voltage of 5 V DC.

• *Secondary circuits*

For secondary circuits see Chapter 4, Circuit Descriptions, Power Supply.

Repair

Troubleshooting

• Required Test Equipment

To be able to test the instrument properly using this manual you will need the equipment listed in Table 9-1. The list contains not only suggested Fluke test equipment, but also the critical parameter specifications required if you have instruments from other manufacturers.

Type	Performance	Model No
DMM	-	PM 2518 or 77
Oscilloscope	50 Mhz 2-channel	PM 3050

Table 9-1 *Required test equipment.*

• Operating Conditions

Power voltage must be in the range of 90 to 260 VAC.

WARNING: Live parts and accessible terminals which can be dangerous to life are always exposed inside the unit when it is connected to the line power. Use extreme caution when handling, testing or adjusting the counter.

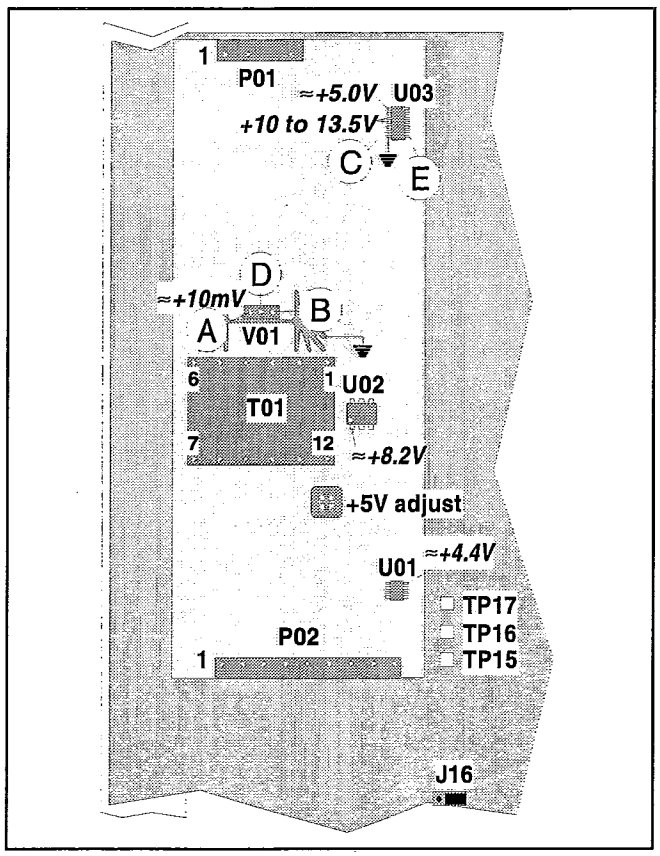


Figure 9-9 *Test points and voltages for the power supply.*

• Primary circuits

CAUTION: If you adjust the +5 V trimmer you have to adjust the complete instrument.

To verify the Power supply proceed as follows:

- If the primary fuse is broken, there is a short circuit in the primary circuits. Use a DMM and try to locate the fault by resistance measuring.
- Remove the cover from the Power Supply.

WARNING: The heat sink inside the power supply is connected to the line power.

- Disconnect the power module from the main PCA and check the resistance between pin 1 and 4 on the transformer T01, see Figure 9-9. If the DMM show a short circuit the fault is proabably a broken transistor V01. Put the power module back in position.
- Connect the counter to the line power via an insulating transformer with separate windings.
- Set the counter to STAND-BY mode.
- Check that the voltage between P14 and P15 is in the range of 90 to 260 VAC.
- Check that the DC voltage between pin 1 and 4 on T01 is about $\sqrt{2}$ times the input AC-voltage. If not, use traditional faultfinding techniques to locate the fault.
- Remove the jumper J16.
- Check the "STAND BY" voltages according to Table 9-2.

Test points	Ground	Voltage
U03 pin 11 & 12	U03 pin 8	+10 to +13.5 V
U03 pin 14	U03 pin 8	≈+5.0 V
V01 source	U03 pin 8	≈+10 mV
U02 pin 1	TP100	≈+8.2 V
U01 pin 1	TP100	≈+4.4 V
TP15	TP100	≈+5.1 V
TP16	TP100	+14.8 V to +21 V
TP17	TP100	–12.5 V to –7.5 V
TP21	TP100	+12 V ±0.5 V

Table 9-2 *Stand-by voltages.*

- Reinstall the jumper J16.
- Check the curveforms according to Figure 9-9 and Figure 9-10 to verify the primary circuits. Use the heat-sink of V01 as ground.

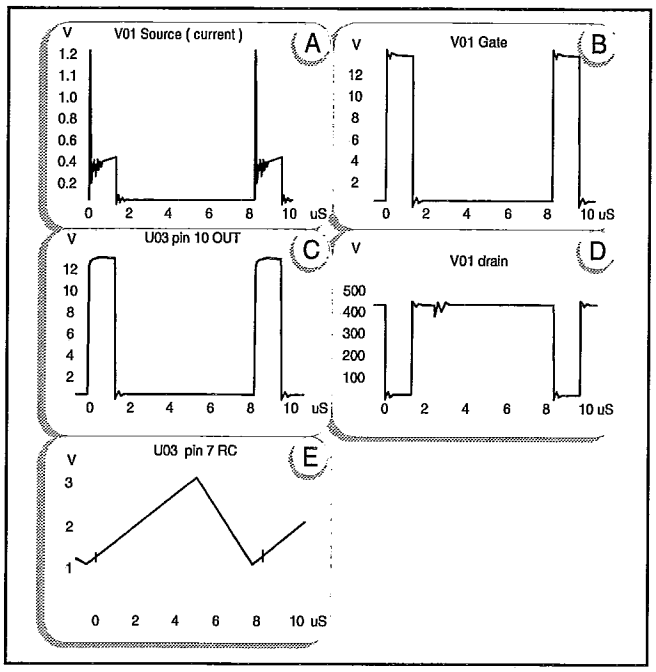


Figure 9-10 *Typical curves of the power supply.*

NOTE: U01 and U03 are located at the bottom side of the PCA.

• *Secondary circuits*

For secondary circuits see Chapter 5, Repair, Power Supply.

Safety Inspection and Test After Repair

• *General Directives*

After repair in the primary circuits, make sure that you have not reduced the creepage distances and clearances.

Before soldering, component pins must be bent on the solder side of the board. Replace insulating guards and plates.

Safety Components

Components in the primary circuits are important to the safety of the instrument and may only be replaced by components obtained from your local Fluke organization.

Check the Protective Ground Connection

Visually check the correct connection and condition and measure the resistance between the protective lead at the plug and the cabinet. The resistance must not be more than 0.5 Ω. During measurement, the power cord should be moved. Any variations in resistance shows a defect.

Calibration Adjustments

Required Test Equipment

Type	Performance	Model No
DMM		PM 2518 or 77

Table 9-3 *Required Test Equipment.*

Preparation

WARNING: Live parts and accessible terminals which can be dangerous to life are always exposed inside the unit when it is connected to the line power. Use extreme caution when handling, testing, or adjusting the counter.

Before beginning the calibration adjustments, power up the instrument and leave it on for at least 60 minutes to let it reach normal operating temperature.

• *Setup*

– Remove the protective cover above the power supply.

WARNING: The heat sink inside the power supply is connected to the line power.

– Connect the counter to the line power.
– Switch on the counter.
– Press PRESET, then press ENTER.

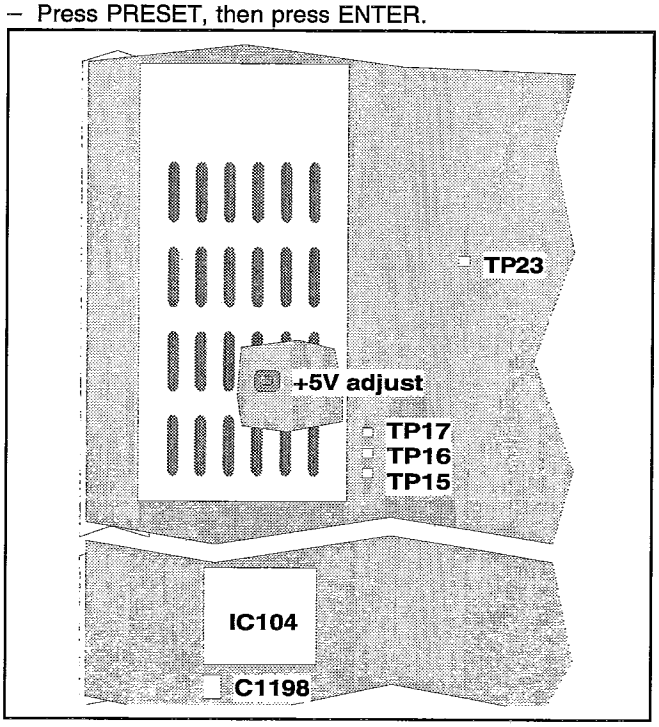


Figure 9-11 *Test points and trimmer for the Power Supply.*

• *Adjustment*

CAUTION: If you adjust the +5 V trimmer you have to adjust the complete instrument.

- Connect the DMM across C1198 near IC111, see Figure 9-11.
- Adjust the +5V trim potentiometer R50 in the power supply until the DMM reads +5.00 ±0.001 V.
- Check that the voltage at the test points TP23=+5 and TP100=GND is +5.00 ±0.05 V.
- Check that the unregulated voltage from the power supply at test points TP16=+15 and TP100=GND is about +18 V.
- Check that the unregulated voltage from the power supply at test points TP17=–7 and TP100=GND is about –8 V.
- Reinstall the protective cover onto the power supply.

Replacement Parts

Pos	Description	Part Number	P
	Heat Sink 16°K/W TO220	5322 255 41313	P
	Heat Sink 13.5°K/W TO220	5322 255 41314	P
C01	Capacitor 1nF 5% 63V	4822 122 31746	
C02	Capacitor 1nF 5% 63V	4822 122 31746	
C03	Capacitor 220pF 20% 200V	5322 126 13129	
C04	Capacitor 33 NF 10% 50V	4822 122 31981	
C05	Capacitor 33 NF 10% 50V	4822 122 31981	
C06	Capacitor 33 NF 10% 50V	4822 122 31981	
C07	Capacitor 100 NF 10% 63V	4822 122 33496	
C08	Capacitor 100 NF 10% 63V	4822 122 33496	
C09	Capacitor 47nF 10% 250V	4822 121 41676	
C10	Capacitor 330 NF 20% 250V	5322 121 44222	
C12	Capacitor 100 UF 20% 35V	5322 124 40852	
C13	Capacitor 220pF 20% 200V	5322 126 13129	
C14	Capacitor 100pF 5% 63V	4822 122 31765	
C15	Capacitor 22pF 5% 200V	5322 126 13128	
C16	Capacitor 4.7nF 10% 63V	4822 122 31784	
C17	Capacitor 4.7nF 10% 63V	4822 122 31784	
C18	Capacitor 100 NF 10% 63V	4822 122 33496	
C19	Capacitor 100 NF 10% 63V	4822 122 33496	
C20	Capacitor 100 NF 10% 63V	4822 122 33496	
C21	Capacitor 470F 20% 35V 2M	5322 126 13131	
C22	Capacitor 470F 20% 35V 2M	5322 126 13131	
C23	Capacitor 10000 UF 20% 6.3V	5322 124 80821	
C24	Capacitor 1nF 5% 63V	4822 122 31746	
C25	Capacitor 100 NF 10% 63V	4822 122 33496	
C26	Capacitor 100 NF 10% 63V	4822 122 33496	
C27	Capacitor 100 NF 10% 63V	4822 122 33496	
C28	Capacitor 220pF 20% 200V	5322 126 13129	
D01	Diode 7A BYW29/200	5322 130 32328	
D02	Diode 7.5A MBR760 60V	5322 130 83602	
D03	Diode 7A BYW29/200	5322 130 32328	
D04	Diode 0.2A BAV23 200V	5322 130 33764	
D06	Diode 0.35 W BZX84-C8V2	5322 130 80255	
D07	Diode BYV26E DOD57	4822 130 60815	
D08	Diode 0.35 W BZX84-C18	5322 130 80212	
D09	Diode 0.2A BAV23 200V	5322 130 33764	
D11	Diode 0.35 W BZX84-C18	5322 130 80212	
D12	Diode 0.35 W BZX84-C18	5322 130 80212	
D13	Diode 0.35 W BZX84-C8V2	5322 130 80255	
D14	Diode 0.2A BAV23 200V	5322 130 33764	
R01	Resistor 82 Ω 1% .125W	4822 051 10829	
R02	Resistor 82 Ω 1% .125W	4822 051 10829	
R03	Resistor 270 Ω 1% .125W	4822 051 10271	
R04	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R06	Resistor 2.20 kΩ 1% .125W	5322 116 80434	
R07	Resistor 1.00 kΩ 1% 0.125W	4822 051 51002	
R08	Resistor 1.80 kΩ 1% .125W	4822 051 10182	
R09	Resistor 3.90 kΩ 1% .125W	5322 116 80443	
R10	Resistor 47 kΩ 1% .125W	5322 116 80446	
R11	Resistor 220 kΩ 1% .125W	5322 116 80436	
R12	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R13	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R14	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R15	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R16	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R17	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R18	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R19	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R20	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R24	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R25	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R26	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R27	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R28	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R29	Resistor 4.7 Ω 10% 0.25W	4833 051 10478	
R30	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R31	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R32	Resistor 100 kΩ 1% 0.125W	4822 051 51004	
R33	Resistor 10.0 Ω 1% 0.125W	4822 051 10109	
R34	Resistor 1.00 kΩ 1% 0.125W	4822 051 51002	
R35	Resistor 2.7 Ω 5% 0.25W	4822 051 10278	
R36	Resistor 2.7 Ω 5% 0.25W	4822 051 10278	
R37	Resistor 2.7 Ω 5% 0.25W	4822 051 10278	
R38	Resistor 1.00 kΩ 1% 0.125W	4822 051 51002	
R39	Resistor 10.0 Ω 1% 0.125W	4822 051 10109	
R40	Resistor 100 Ω 1% 0.125W	5322 116 80426	
R41	Resistor 100 Ω 1% 0.125W	5322 116 80426	
R42	Resistor 1.00 kΩ 1% 0.125W	4822 051 51002	
R43	Resistor 100 Ω 1% 0.125W	5322 116 80426	
R44	Resistor 100 Ω 1% 0.125W	5322 116 80426	
R45	Resistor 1.00 kΩ 1% 0.125W	4822 051 51002	
R46	Varistor 95V 95VRMS4.1J	5322 116 21222	
R47	Resistor 4.70 kΩ 1% .125W	5322 116 80445	
R48	Resistor 10.0 kΩ 1% 0.125W	4822 051 51003	
R49	Resistor 22.0 kΩ 1% .125W	5322 116 80435	
R50	Potentiometer 1 kΩ 20%	4822 101 10792	
R51	Resistor 3.30 kΩ 1% .125W	4822 051 53302	
R52	Resistor 8.20 kΩ 1% .125W	4822 051 10822	
R53	Resistor 470 kΩ 1% .125W	5322 116 80447	

Pos	Description	Part Number	P
R54	Resistor 470 kΩ 1% .125W	5322 116 80447	
R55	Resistor 2.7OHM 5% 0.25W	4822 051 10278	
R56	Resistor 100 Ω 1% 0.125W	5322 116 80426	
R57	Resistor 47 Ω 1% .125W	5322 116 80448	
R58	Resistor 270 Ω 1% .125W	4822 051 10271	
T01	Transformer	5322 148 20035	P
U01	IC-ref 2.5V TL431I-D SO8	5322 209 62422	
U02	Optocoupler CNX82A	4822 130 10025	

Pos	Description	Part Number	P
V02	Transistor 0.50 A BC807-25	5322 130 60845	
V03	Transistor 0.50 A BC817-25	4822 130 42804	
V04	Transistor 0.50 A BC817-25	4822 130 42804	
V05	Transistor 0.50 A BC817-25	4822 130 42804	
V06	Transistor 0.50 A BC817-25	4822 130 42804	
V07	Transistor 0.50 A BC817-25	4822 130 42804	
V08	Transistor 0.50 A BC807-25	5322 130 60845	

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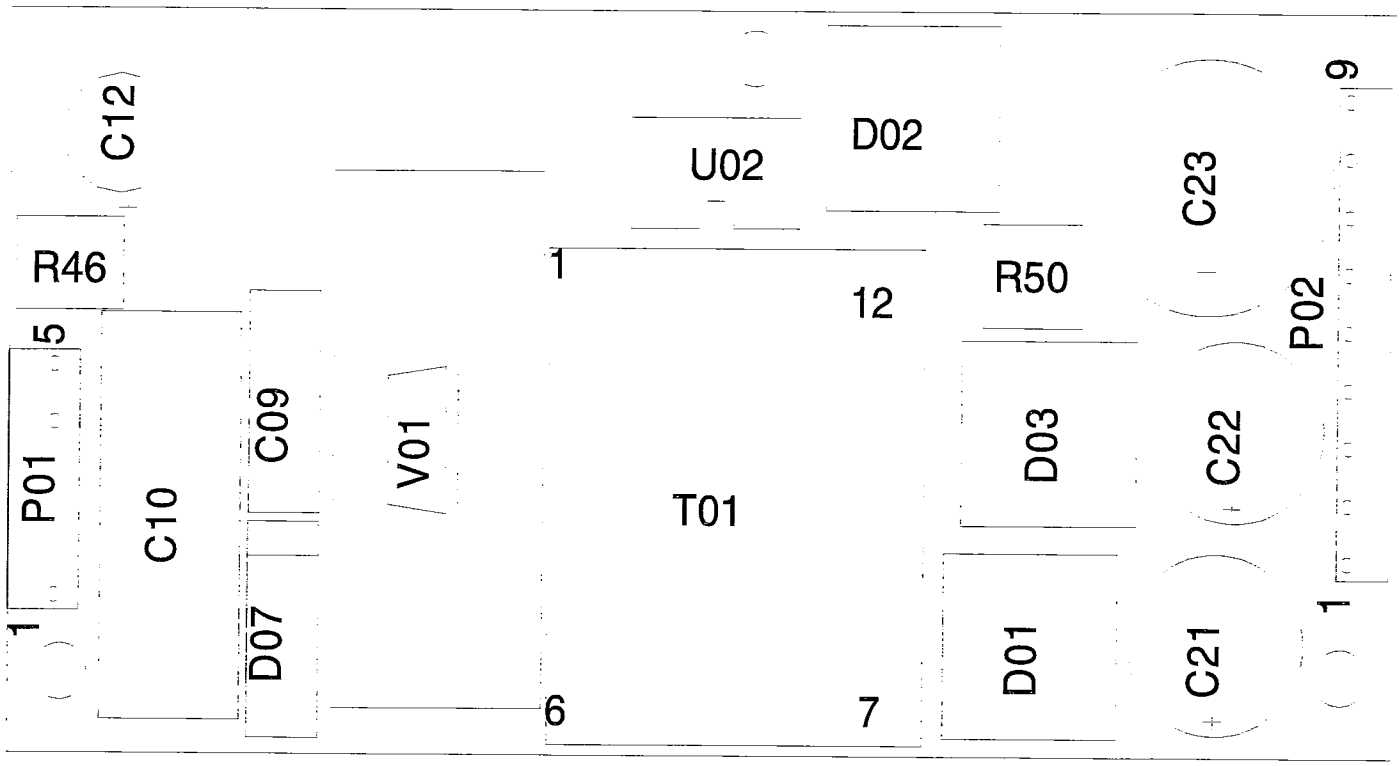
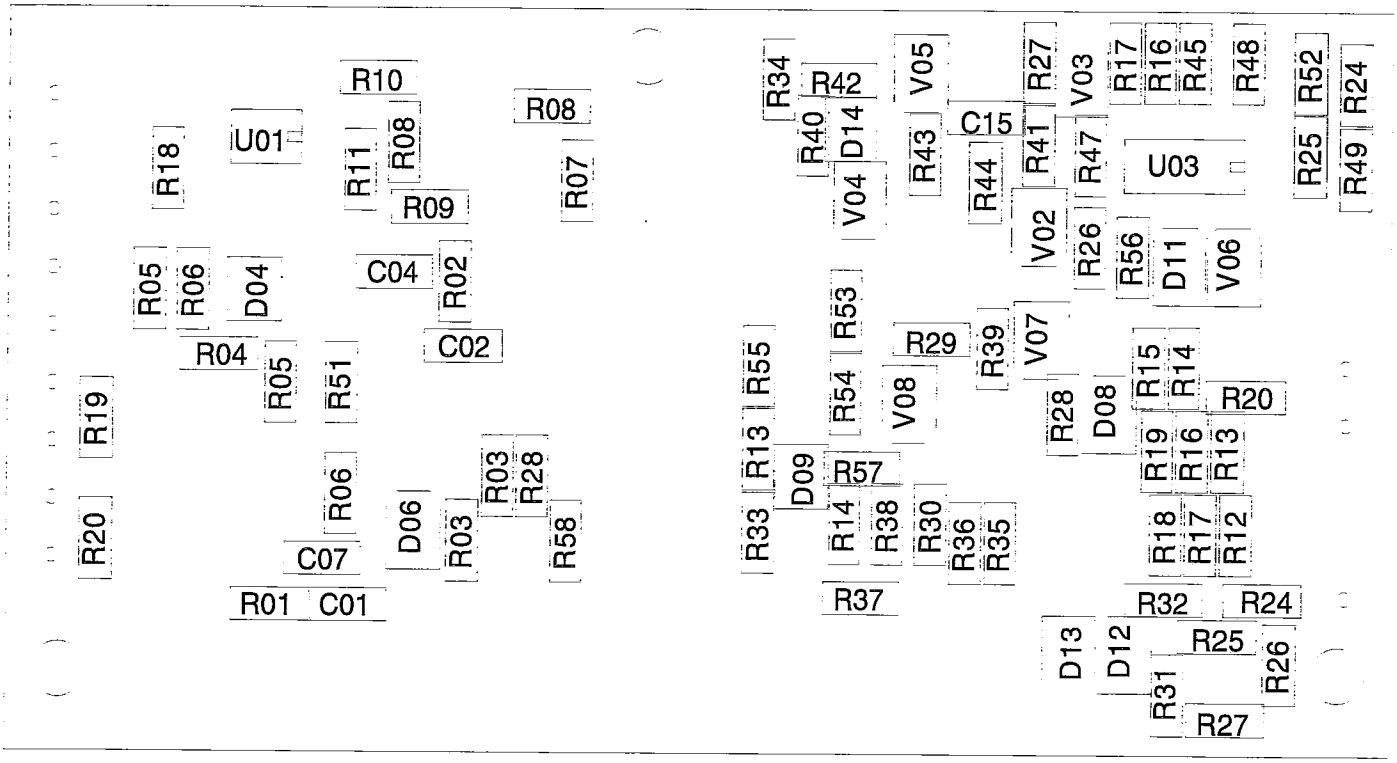
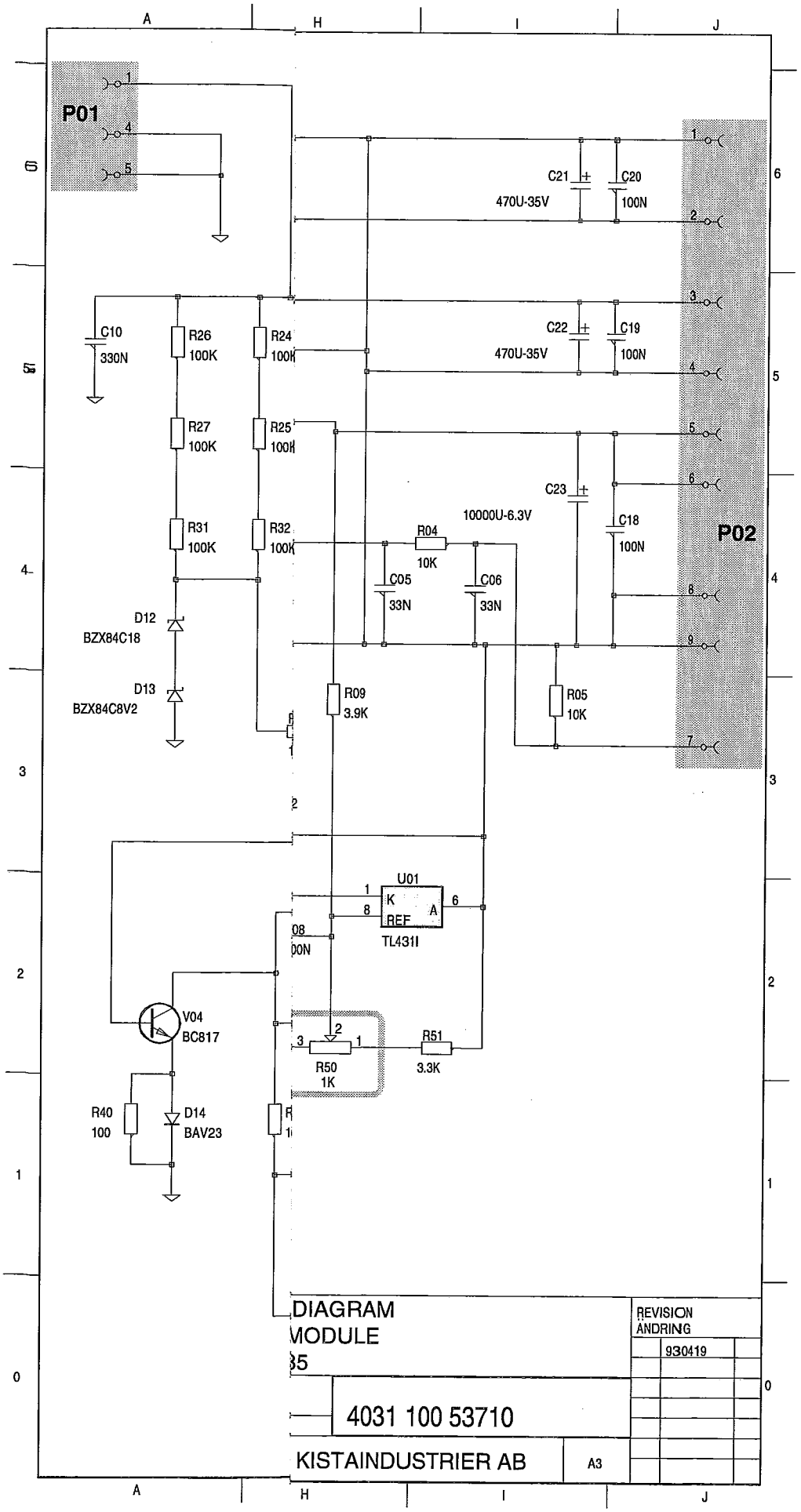
Power Supply, Component layout



4031 100 53740 02




P01
P02
C10
330N
R26
100K
R27
100K
R31
100K
R24
100K
R25
100K
R32
100K
C21
470U-35V
C20
100N
C22
470U-35V
C19
100N
C23
10000U-6.3V
C18
100N
R04
10K
C05
33N
C06
33N
R05
10K
R09
3.9K
D12
BZX84C18
D13
BZX84C8V2
U01
K
REF
A
TL431I
V04
BC817
R50
1K
R51
3.3K
R40
100
D14
BAV23
DIAGRAM
MODULE
4031 100 53710
KISTAINDUSTRIER AB
A3
REVISION
ANDRING
930419

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PM 6680 Performance Check Report

Power-On Test (page 2-2)	Pass	Fail

Internal Self-tests (page 2-2)	Pass	Fail

Keyboard Test (page 2-3)			
Key(s)	Display	Pass	Fail
STAND-BY	Display Off		
ON	Backlight on		
PRESET ENTER	DEFAULT? 0		
EXT REF	EXT REF		
Input A			
FILTER	FILTER		
IMP	50 Ω		
SLOPE	⌐		
COUPL	DC		
AUTO	1X		
ATT	10X		
SET A 1 . 7 3	1.73 V Enter		
ENTER	0		
A ⇄ B	A ⇄ B		
Input B			
SLOPE	⌐		
IMP	50 Ω		
SET B 0 . 9 8 –	0.98 V Enter		
ENTER	0		
COUPL	AC		
ATT	10X		
COM A	COM A		
HOLD OFF ON	HOLD OFF		
HOLD OFF SET	10^{-6}		
PRESET	0		

Keyboard Test (page 2-3)			
Key(s)	Display	Pass	Fail
Other			
PRESET ENTER	DEFAULT? 0		
MEAS TIME SET	200^{-3} s		
SELECT ↑	500^{-3} s		
ENTER	0		
DISPL HOLD	DISPL HOLD		
DISPL HOLD			
SINGLE	SINGLE		
FUNCTION ←	VOLT AMAX/MIN		
FUNCTION ←	RISE/FALL A		
FUNCTION →	VOLT A MAX/MIN		
FUNCTION →	FREQ A		
AUX MENU	Previous AUX MENU selection (TEST, if you have done Internal self-test)		
RESTART	0		
PRESET ENTER	DEFAULT? 0		
ARM START	OFF		
RESTART	0		
ARM STOP	OFF		
CHECK	10.000000006Hz*		
MATH SELECT ↓ ENTER	OFF ON (K*X+L)/M		
K= 2	2		
ENTER	20.00000000^{6} Hz*		
L= Xn 1 ENTER	30.00000000^{6} Hz*		
L=	n 1		
0 ENTER	20.00000000^{6} Hz*		
L= Xo ENTER	40.00000000^{6} Hz*		
L=	20.00000000^{6} Hz*		
CLEAR	0		

Keyboard Test (page 2-3)

Key(s)	Display	Pass	Fail
4 EE 6 ENTER	24.00000000[6] Hz*		
M= . 5	0.5		
ENTER	48.0000000[6] Hz*		
STAT	OFF		
ENTER	48.0000000[6] Hz*		
FUNCTION← (6 times)	TOT A B MAN		
TOT St/St	Gate LED lit		
MENU	Displays all available functions, processes and input controls. Selected items are blinking.		
PRESET ENTER	DEFAULT? 0**		

*) The LSD digit may vary.

**) MENU is not disabled by setting DEAFULT, press menu again.

Sensitivity and Frequency Range (page 2-4)

Frequency	Level	Measure value	Pass	Fail
Input A				
1 MHz	20 mV_{RMS} 21 dBm			
25 MHz	20 mV_{RMS} –21 dBm			
50 MHz	20 mV_{RMS} –21 dBm			
160 MHz	30 mV_{RMS} –17 dBm			
200 MHz	40 mV_{RMS} –15 dBm			
225 MHz	40 mV_{RMS} 15 dBm			
Input B				
1 MHz	20 mV_{RMS} –21 dBm			
25 MHz	20 mV_{RMS} –21 dBm			
50 MHz	20 mV_{RMS} –21 dBm			
160 MHz	30 mV_{RMS} –17 dBm			

Check VMAX/VMIN (page 2-4)

Input signal	Level V_{MAX} V_{MIN}	Measured value	Pass	Fail
Input A				
None	0 ±30 mV			
	0 ±30 mV			
4.00 V_{DC}	4.00 ±0.12 V			
	4.00 ±0.12 V			
40 V_{DC}	40 ±1.6 V			
	40 ±1.6 V			
–4.00 V_{DC}	–4.00 ±0.12 V			
	–4.00 ±0.12 V			
–40 V_{DC}	–40 ±1.6 V			
	–40 ±1.6 V			
4.00 V_{PP}	2.00 ±0.28 V			
	–2.00 ±0.28 V			
18 V_{PP}	9 ±1.6 V			
	–9 ±1.6 V			
Input B				
None	0 ±30 mV			
	0 ±30 mV			
4.00 V_{DC}	4.00 ±0.12 V			
	4.00 ±0.12 V			
40 V_{DC}	40 ±1.6 V			
	40 ±1.6 V			
–4.00 V_{DC}	–4.00 ±0.12 V			
	–4.00 ±0.12 V			
–40 V_{DC}	–40 ±1.6 V			
	–40 ±1.6 V			
4.00 V_{PP}	2.00 ±0.28 V			
	–2.00 ±0.28 V			
18 V_{PP}	9 ±1.6 V			
	–9 ±1.6 V			

Trigger Indicator (page 2-4)

Manually set trigger level	Trigger indicator	Pass	Fail
Input A			
+ 1.0 V	off		
– 1.0 V	on		
0.0 V	blinking		
Input B			
+ 1.0 V	off		
– 1.0 V	on		
0.0 V	blinking		

Trigger Level
(page 2-4)

Trigger setting	Trigger indicator	Pass	Fail
Input A			
SET A = 0 V	blinking		
COUPL = DC	on		
SET A = 0.7 V	blinking		
IMP = 50 Ω	off		
SET A = 0.2 V	blinking		
COUPL = AC & IMP = 1 MΩ	blinking		
ATT = X10	off		
SET A = 0.0 V	blinking		
ATT = X1	blinking		
Input B			
SET B = 0 V	blinking		
COUPL = DC	on		
SET B = 0.7 V	blinking		
IMP = 50 Ω	off		
SET B = 0.2 V	blinking		
COUPL = AC & IMP = 1 MΩ	blinking		
ATT = X10	off		
SET B = 0.0 V	blinking		
ATT = X1	blinking		

Reference Oscillators
(page 2-4)

Oscillator	Frequency readout	Measured value	Pass	Fail
Standard, 01	10.00000000 MHz ± 150 Hz			
PM 9678B 02	10.00000000 MHz ± 15 Hz			
PM 9690, 04	10.00000000 MHz ± 2 Hz			
PM 9691, 05	10.00000000 MHz ± 1 Hz			

Resolution Test
(page 2-5)

Readout	Pass	Fail
For PM 6680 < 0.5 ns		
For PM 6680B< 0.25 ns		

Rear Input/Output
(page 2-5)

Function	Readout	Measured value	Pass	Fail
EXT REF OUT	>1.4 V_{PP}			
GATE OPEN Output	—			
EXT REF Input	10.00000000 $^{-6}$ Hz ±5 LSD			
EXT ARM Input	—			

Trig Level Outputs
(page 2-6)

SET A(B)	Readout	Measured value	Pass	Fail
Input A				
+ 5.00 V	+ 0.5 V ±0.06 V			
– 5.00 V	– 0.5 V ±0.06 V			
0.00 V	0 V ±0.05 V			
Input B				
+ 5.00 V	+ 0.5 V ±0.06 V			
– 5.00 V	– 0.5 V ±0.06 V			
0.00 V	0 V ±0.05 V			

Probe Comp View
(page 2-6)

Attenuator	Oscilloscope readout	Measured value	Pass	Fail
Input A				
X1	2 kHz, 4 V_{PP}			
X10	2 kHz, 0.4 V_{PP}			
Input B				
X1	2 kHz, 4 V_{PP}			
X10	2 kHz, 0.4 V_{PP}			

Measuring Functions
(page 2-6)

Selected Function	Display	Measured value	Pass	Fail
PRESET ENTER	DEFAULT? 10 MHz 2)			
IMP A 50 Ω	10 MHz 2)			
Non AUTO	10 MHz 2)			
COM A	10 MHz 2)			
PER A	100 ns 2)			
RATIO A/B	1.0000000			
PWIDTH A	50 ns[1)]			
TIME A-B NEG SLOPE B	50 ns[1)]			
PHASE A-B	180 or –180[1)]			
TOT A-B	0			
Not COM A	0			
St/St	counting			
St/St	stop counting			
COM A	0			
TOT A St/St B	1			
TOT A gated B	1			
POS SLOPE B	0			
DUTY FACT	0.500000[1)]			
AUTO	0.500000[1)]			
RISE/FALL	30 ns[2)]			
VOLT MAX/MIN	+1.00 V –1.00 V			

1) Value depends on the symmetry of the signal.

2) Exact value depends on input signal.

HOLD OFF
(page 2-7)

Hold Off	Readout	Measured value	Pass	Fail
Input A				
Off	20 kHz			
On	10 kHz			
Input B				
Off	20 kHz			
On	10 kHz			

Sensitivity of PM 9621
(page 2-7)

Frequency	Amplitude	Measured value	Pass	Fail
70-900 MHz	10 mV_{RMS} –27 dBm			
-1100 MHz	15 mV_{RMS} –23 dBm			
-1300 MHz	40 mV_{RMS} –15 dBm			

Sensitivity of PM 9624
(page 2-8)

Frequency	Amplitude	Measured value	Pass	Fail
100-300 MHz	20 mV_{RMS} –21 dBm			
-2500 MHz	10 mV_{RMS} –27 dBm			
-2700 MHz	20 mV_{RMS} –21 dBm			

Sensitivity of PM 9625B
(page 2-8)

Frequency	Amplitude	Measured value	Pass	Fail
150-300 MHz	20 mV_{RMS} –21 dBm			
-2200 MHz	10 mV_{RMS} –27 dBm			
-3500 MHz	15 mV_{RMS} –23.5 dBm			
-4200 MHz	25 mV_{RMS} –19 dBm			

Sensitivity of PM 9625
(page 2-8)

Frequency	Amplitude	Measured value	Pass	Fail
150-300 MHz	20 mV_{RMS} –21 dBm			
-2500 MHz	10 mV_{RMS} –27 dBm			
-3500 MHz	15 mV_{RMS} –23.5 dBm			
-4200 MHz	25 mV_{RMS} –19 dBm			
-4500 MHz	50 mV_{RMS} –13 dBm			

Function of PM 9697, External Reference Frequency Multiplier
(page 2-8)

Position	Frequency	Measured value	Pass	Fail
X1	10.00000000^{6} MHz			
X5	5.00000000^{6} MHz			
X10	1.00000000^{6} MHz			

Total Performance check

	Pass	Fail
Date:		
Test performed by:		