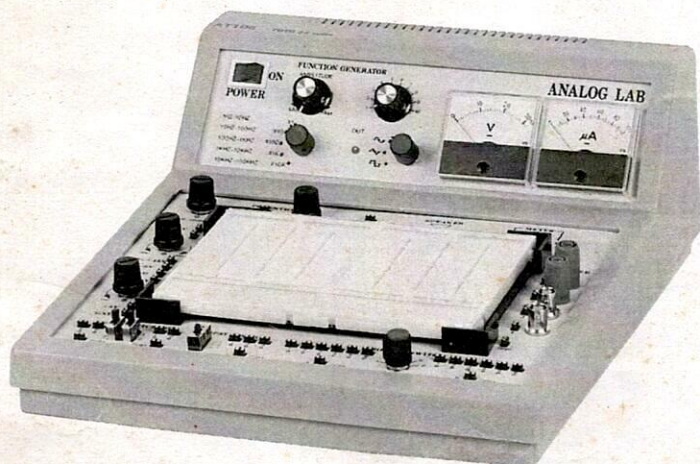


USER'S MANUAL



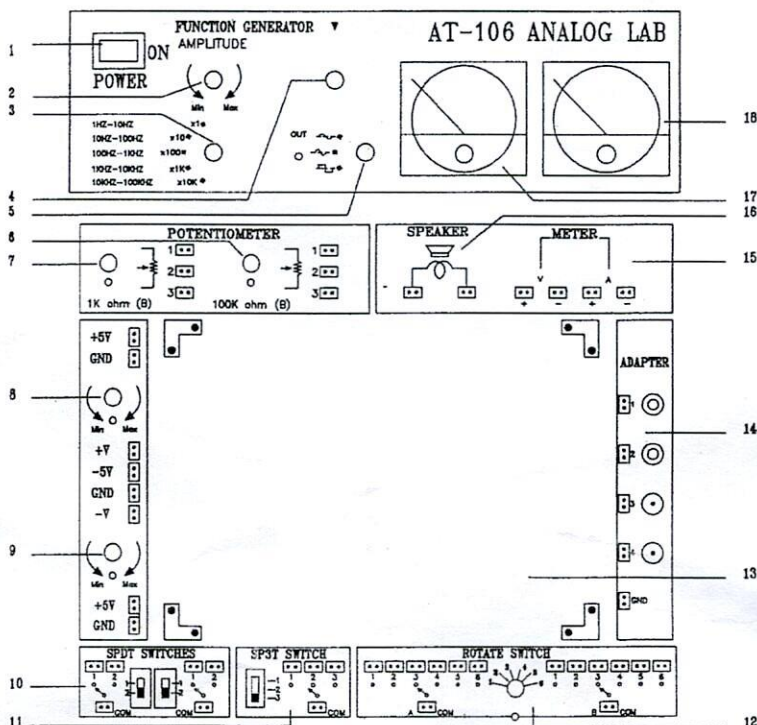
ANALOG TEST UNIT
REF. AT106

AT-106 ANALOG LAB

AT-106 Analog Lab is designed in order to accommodate the analog circuits equivalence. The main purpose of this Lab is to enable the users to acquire conveniently the DC power supply, signal generator, currentmeter, voltagemeter, potentiometer and switches which are used very often but not easily installed.

To meet the human body operation, the solderless bread board is fixed on the lower part and four point tip/banana socket/BNC socket exchange adapters on the right part of this Lab, in order to make the peripheral instruments and experimental circuits be connected to the interface for application.

The details are as follows :



1. POWER SWITCH WITH INDICATOR.
2. F.G. OUTPUT AMPLITUDE ADJUSTER.
3. F.G. OUTPUT FREQUENCY RANGE SELECTOR.
4. FINE TUNE OF F.G. OUTPUT FREQUENCY.
5. F.G. OUTPUT WAVE FORM SELECTOR.
6. POTENTIOMETER ($VR2 = 100K \Omega$).
7. POTENTIOMETER ($VR1 = 1K \Omega$).
8. DC 0 to +15 ADJUSTER.
9. DC 0 to -15 ADJUSTER.
10. BI-STATE SLIDE SWITCHES.
11. TRI-STATE SLIDE SWITCHES.
12. ROTATION SW.
13. 1896 TIE POINTS SOLDERLESS BREADBOARD.
14. POINT TIP/BANANA SOCKET/BNC SOCKET EXCHANGE ADAPTERS.
15. VOLTAGEMETER AND CURRENTMETER INPUT POINT TIPS.
16. SPEAKER INPUT ($2.25" \ 8 \Omega$).
17. VOLTAGEMETER (30 VDC $320K \Omega$).
18. CURRENTMETER ($100\mu A \ 1K \Omega$).

SPECIFICATION

1. SOLDERLESS BREADBOARD:

Interconnected nickel plated with a total of 1896 tiepoints , fitting all DIP size components with lead and solid wire in diameter 0.3—0.8mm.

This Bread Board is removeable type.

2. DC POWER SUPPLY:

Variable DC power:

Positive output voltage 0 to +15V.

Negative output voltage 0 to -15V.

Maximum output current 300mA.

Line regulation $< 0.05\%/V$ ($T_a=25^\circ C$).

Load regulation $< 30\text{ mV}$.

Fixed power supply:

Positive output voltage 5V $\pm 0.25V$.

Maximum output current 1 Amp.

Line regulation $< 50\text{ mV}$.

Load regulation $< 100\text{ mV}$.

Negative output voltage -5V $\pm 0.25V$.

Maximum output current 100 mA.

Line regulation $< 25\text{ mV}$.

Load regulation $< 30\text{ mV}$.

All DC power supplies equipped with short-circuit protection.

3. FUNCTION GENERATOR:

| | | | |
|------------------|-------|---|--------|
| Frequency ranges | 1HZ | — | 10HZ |
| | 10HZ | — | 100HZ |
| | 100HZ | — | 1KHZ |
| | 1KHZ | — | 10KHZ |
| | 10KHZ | — | 100KHZ |

Sine wave output: 0 to 8 Vp-p variable.

Triangle wave output: 0 to 6 Vp-p variable.

Square wave output: 0 to 8 Vp-p variable.

PARTS LIST

PARTS LIST

DC POWER SUPPLY P. C. B.

| SYMBOL | MODEL | QUANTITY |
|------------------|--------------------|----------|
| R107, R108 | 100 Ω 1/4W | 2 |
| R101, R102 | 330 Ω 1/4W | 2 |
| R105, R106 | 3.3K Ω 1/4W | 2 |
| R103, R104 | 3.9K Ω 1/4W | 2 |
| SVR1, SVR2 | 502 | 2 |
| C108 | 0.1uF Mylar | 1 |
| C105, C106, C107 | 10u/50V Electro | 3 |
| C102, C103, C104 | 1000u/35V Electro | 3 |
| C101 | 4700u/16V Electro | 1 |
| D1 - D6 | Diode 1N4148 | 6 |
| BRD1, BRD2, BRD3 | Bridge R.D : RB153 | 3 |
| IC1 | LM7805(T) | 1 |
| IC2 | LM7905(T) | 1 |
| IC3 | LM317(T) | 1 |
| IC4 | LM337(T) | 1 |
| J3 | Jump Wire : 0.4" | 1 |
| J1, J2 | Jump Wire : 0.9" | 2 |

PARTS LIST

PARTS LIST

FUNCTION GENERATOR P. C. B.

| SYMBOL | MODEL | QUANTITY |
|------------------------------|--------------------|----------|
| R318 | 47 Ω 1/4W | 1 |
| R315 | 56 Ω 1/4W | 1 |
| R314 | 100 Ω 1/4W | 1 |
| R313 | 820 Ω 1/4W | 1 |
| R310 | 1K Ω 1/4W | 1 |
| R307 | 1.2K Ω 1/4W | 1 |
| R321 | 5.1K Ω 1/4W | 1 |
| R320 | 2.2K Ω 1/4W | 1 |
| R301, R302, R312 | 3.3K Ω 1/4W | 3 |
| R311 | 3.6K Ω 1/4W | 1 |
| R305, R306 | 5.6K Ω 1/4W | 2 |
| R303, R308, R309, R316, R317 | 10K Ω 1/4W | 5 |
| R319 | 22K Ω 1/4W | 1 |
| R304 | 9.1M Ω 1/4W | 1 |
| SVR3 | SVR501 (5x5) | 1 |
| SVR7 | SVR102 (5x5) | 1 |
| SVR4, SVR8 - SVR11 | SVR332 (5x5) | 5 |
| VR3 | VR 5K Ω | 1 |
| VR4 | VR 500 Ω | 1 |
| C309 | 420 PF | 1 |
| C308 | 0.0047uF Mylar | 1 |
| C307 | 0.047uF Mylar | 1 |
| C306 | 0.47uF Tantalum | 1 |
| C304 | 100uF/16V Elec | 1 |
| C305 | 4.7uF Tantalum | 1 |
| C301, C302 | 0.01uF Mylar | 2 |
| C303 | 0.1uF Mylar | 1 |
| ZD9, ZD10 | Zener Diode 12V | 2 |
| Q1, Q3 | Transistor 9013 | 2 |
| Q2 | Transistor 9012 | 1 |
| Q4 | Transistor 5551 | 1 |
| | 3 Bound Switch | 1 |
| | 5 Bound Switch | 1 |
| IC10 | 8038 | 1 |
| IC11 | TL071 | 1 |
| SVR5, SVR6 | SVR104 (5x5) | 2 |

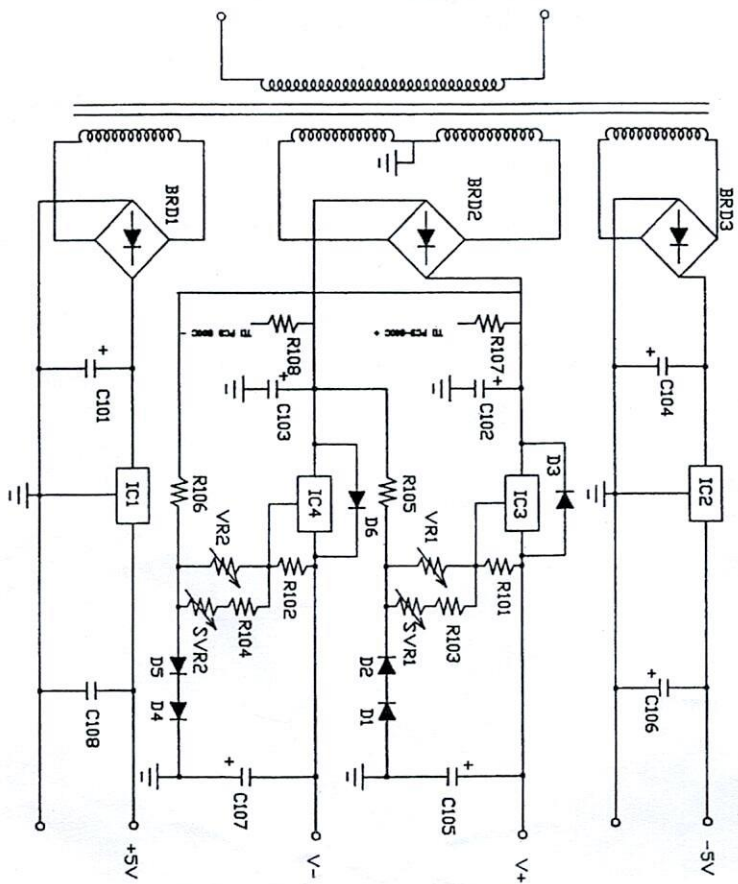


Fig. 1 Circuit Diagram of Power Supply

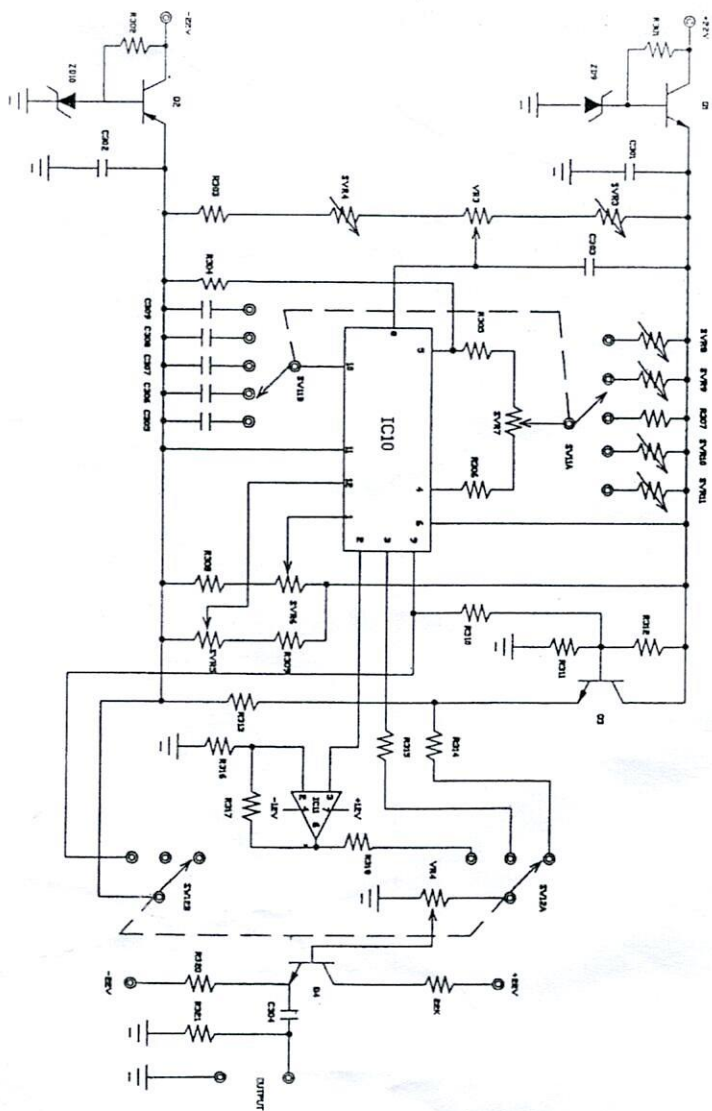
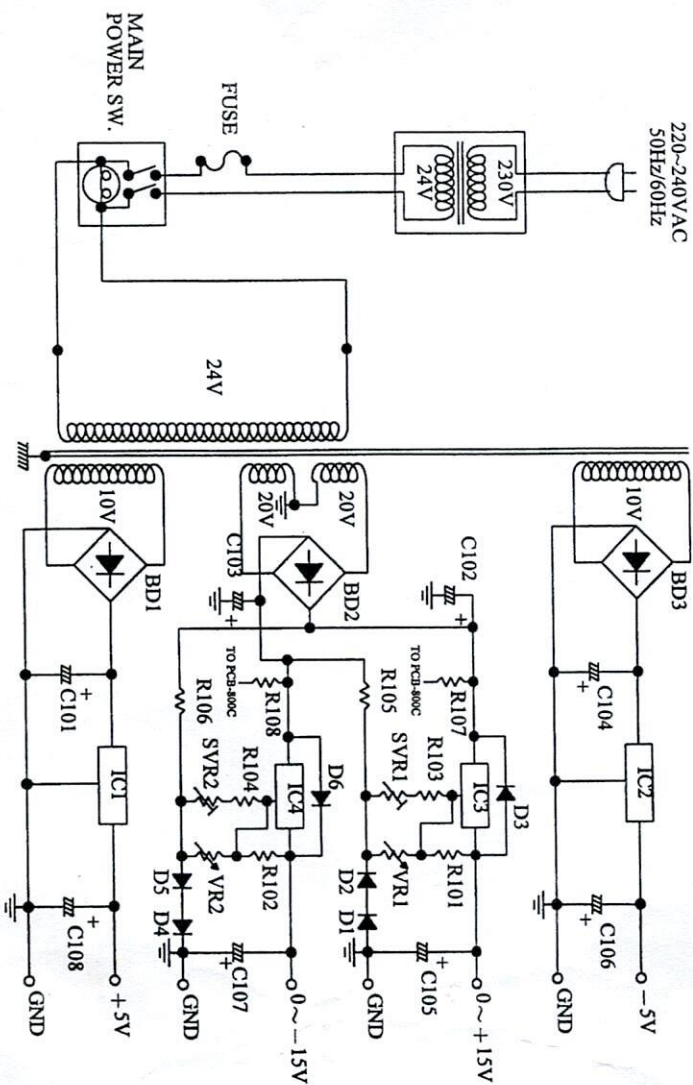


Fig. 2 Circuit Diagram of Function Generator



Circuit Diagram of Power Supply for LVD design

