ANALOG COMPUTER

Prepared By

HyperTronics

USER MANUAL – ANALOG COMPUTER

1. Introduction

The Analog Computer developed by Team HyperTronics is a modular device that performs real-time analog computations using operational amplifiers.
This unit supports:

- Addition
- Subtraction
- Multiplication
- Integration
- Differentiation
- Adjustable Gain Control

It operates in the frequency range of 1 Hz to 10 kHz and is powered by a dedicated dual ±12 V low-noise supply module.

2. Safety Instructions

Before operating the Analog Computer:

- Ensure the power supply is connected properly (±12 V regulated).
- Do not exceed input voltage ±10 V.
- Avoid short-circuiting the output terminals.
- Use only shielded cables for clean operation.
- Do not operate with wet hands or near water.
- Turn OFF power before changing internal wiring or PCB connections.

3. System Overview

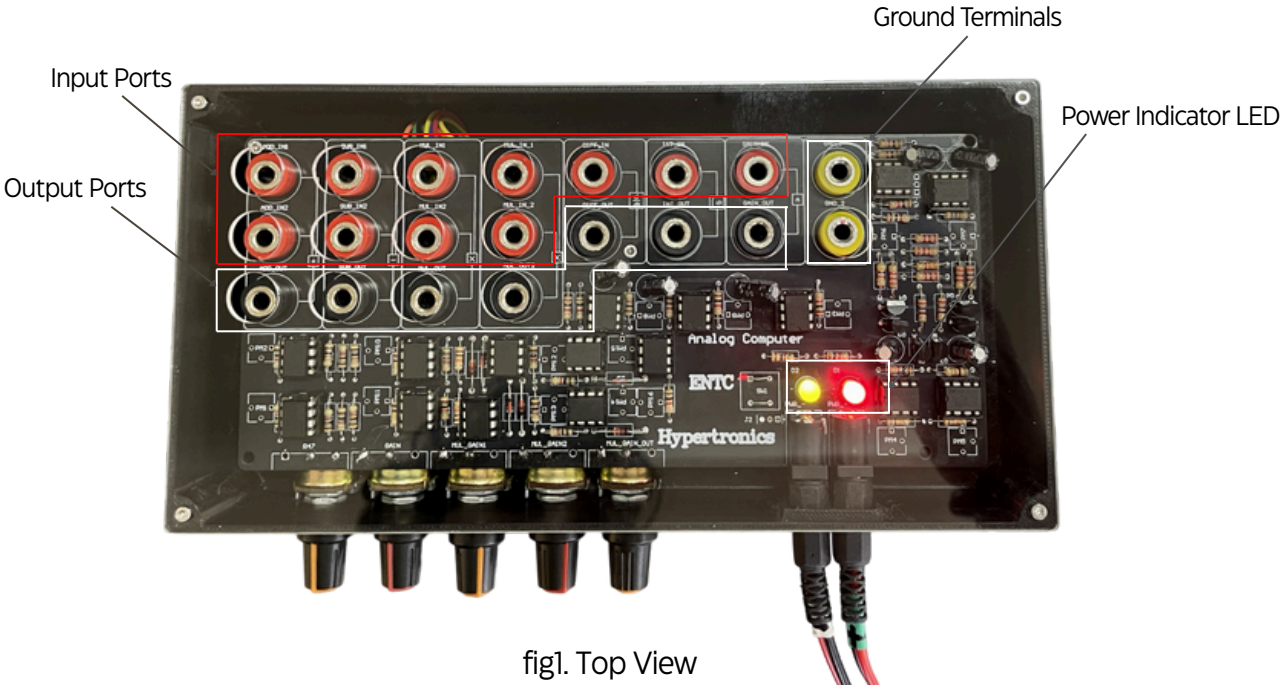

fig1. Top View

fig2. Front View

3. Powering the Device

1. Connect the power supply module to AC mains.
2. Connect the ±12 V output of the power module to the Analog Computer power port.
3. Ensure correct polarity:
   +12 V → V+
   -12 V → V-
   GND → Ground Terminal shown in fig. 1
4. Turn ON the power supply; the LED on the unit should light up.

fig3. LED indicators

5. Operating Instructions

How to Use:

1. Select the ports for the relevant mode. (See the symbol in PCB for select operation)
2. Input signals to Input 1 and Input 2. (Red colour ports)
3. Read the result at Output. (Black colour port)

fig4. Operation Selection

7. Troubleshooting

No Output

- Check power supply connections.
- Verify input cables and function generator output.

Distorted Output

- Input frequency may be too high.
- Component saturation; reduce input amplitude.
- Check gain setting.

Noise in Signals

- Ensure grounding is proper.
- Keep analog computer away from switching power supplies.

Integrator Output Drifts

- Normal due to leakage; reset by disconnecting input.

8. Maintenance

- Keep the device clean and dust-free.
- Store in a dry environment.
- Periodically check connectors and potentiometers.

9. Technical Specifications

Parameter	Value
Supply Voltage	±12 V
Input Range	less than 15 V
Output Range	±12 V (approx.)
Bandwidth	10–30 kHz
Accuracy	1% (typical)
Weight	600 g
Dimensions	44 × 109 × 214 mm

10. Support

For troubleshooting, contact the Team HyperTronics