

**PROTO-BOARD
PB-203A**

**Instruction, Operation
and Application Manual**



GLOBAL SPECIALTIES

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Unit #2

Cheshire, CT 06410

203-575-1000

80-01-0008
5/86

SPECIFICATIONS

The solderless breadboarding area includes three Model QT-59S Quick Test socket strips, four Model QT-59B Quick Test bus strips and one Model QT-47B Quick Test bus strips.

POWER SUPPLY

+5 VDC

Voltage: 5.0 + 0.2 VDC
Current: 1.0 Amp max, current limited
Regulation: Better than 0.8% load regulation, $\pm 0.02\%/^{\circ}\text{C}$
Ripple: Less than 4mVp-p at 1 Amp

+15 VDC

Voltage: Factory set to +15 VDC, adjustable internally +5.5 -18 VDC
Current: 0.5 Amp max, @ +15 VDC
Regulation: Better than 1% load regulation, $\pm 0.04\%/^{\circ}\text{C}$
Ripple: Less than 10mVp-p at 0.5 Amp

-15 VDC

Voltage: Factory set to -15 VDC, adjustable internally, -5.5 -18VDC
Current: 0.5 Amp max, @ -15 VDC
Regulation: Better than 1% load regulation, $\pm 0.04\%/^{\circ}\text{C}$
Ripple: Less than 10mVp-p at 0.5 Amp

CONTROLS

Power switch with pilot light

IC CAPACITY

24 14-pin DIPs

POWER

108-130 VAC, 60 Hz; better than 0.15% line regulation at 1 Amp output (215-250 VAC 50-60 Hz where applicable)

DIMENSIONS

9.8 x 6.6 x 3.3 inches L x W x H (248 x 168 x 83 mm); 5.5 lbs (2.5 kg)

USING YOUR PB-203A

OPERATING INSTRUCTIONS

Uncoil the power cord and plug your PB-203A into a 115V AC 60 Hz outlet.* Push the power switch on.

Your power supply bank is now activated, giving you +5 Volts at one Amp for digital circuitry, and +15 and -15 Volt supplies at $\frac{1}{2}$ Amp for linear and op-amp circuitry. All supplies are regulated and current limited for maximum performance and safety.

The black binding post is common ground to all power supplies.

* 220V 50-60 Hz where applicable.

POWER DISTRIBUTION AND JUMPER WIRES

Ten distribution buses are provided on each PB-203A; two horizontal buses with 40 contacts each and eight vertical buses with 50 contacts each. One possible power distribution scheme for a single power supply is shown in Figure 1.

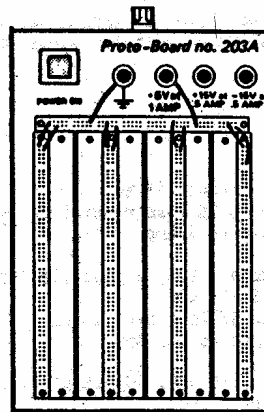


Figure 1

The jumper wires should be #22 gauge solid hook-up wire.* We suggest that the insulation on the jumper wires should be stripped 1/2" to 3/8" from each end to insure easy insertion into the Quick Test Sockets and Bus Strips.

After you have built up a few circuits, you will have a good collection of pre-stripped jumper wires. Save them. By reusing these wires, you can save even more time and effort in assembling future circuits.

* See Global Specialties WK-1 Wire Jumper Kit #11-0044

COMPONENT INSERTION

ICs are mounted by lining up the leads with the contact holes on each side of the center of a Quick Test Socket, then pressing gently at the center of the IC until it clicks into position.

Withdrawing the IC can be tricky. You should use a thin-bladed screwdriver or similar object. Slide the end of the screwdriver blade under one end of the IC and lift gently. Repeat on the other side. Then remove the IC from the socket. By following this procedure, you will not bend the leads of the IC.

TO-5 case ICs can be accommodated by pre-forming the leads so that they resemble a DIP pack. This is easily done with a set of long-nose pliers.

Transistors can be inserted bridging the center of a Quick Test Socket, or with leads-in-line on one side of the socket.

Diodes, resistors, and capacitors may be inserted in the same manner as jumper wires.

USING THE PB-203A

The PB-203A is ideally suited to virtually any type of IC bread-boarding from TTL, CMOS, and ECL to op-amps, audio, comparitors, video amps, micro-processor components, phase locks and more. However, certain normal bread-boarding precautions should be taken:

Ground Loops: A ground loop is a Voltage drop on a ground bus, caused by a power stage output ground, entering the ground bus some distance away from the power supply ground binding post.

This Voltage drop, though only milli or microVolts, is part of the output load. If a preamplifier input or circuit ground is connected to a portion of this ground bus, feedback and oscillation can occur. To prevent this, all output stages should be positioned closest to the ground terminal, pre-amps further away.

By observing this simple rule, you will save hours of troubleshooting. Many audio ICs have separate input and output grounds to prevent ground loops.

By-Pass Capacitors: Even though the PB-203A's power supplies are tightly regulated, a short length of power bus can look like enough inductance to cause a linear IC to break into oscillation at high frequencies.

For this reason, good by-pass capacitors are needed. They should by-pass the power buses as close to the IC's power supply pins as possible. .1 μ f disc ceramics work fine, and should be used across every IC.

Do not use electrolytic or paper capacitors as power bus by-pass caps. They have high inductances, and cease to act as by-passes above one or two mega-Hertz.

Good by-passing is required with digital ICs also. It can cause such problems as inability to reset or clear, and false triggering.

COMBINING POWER SUPPLIES

By adding the 15 Volt supplies we can produce a 30 Volt supply at .5 Amp. This means that the load goes from the +15 Volt terminal to the -15 Volt terminal.

We can also add the +5 Volt supply to the -15 Volt supply to make a 20 Volt supply. The load goes from the -15 Volt terminal to the +5 Volt terminal.

This gives us a total of 4 different Voltages: 5V, 15V, 20V, and 30V, and also +15 V for op-amps. Figure 3 shows all the possible combinations of power supplies.

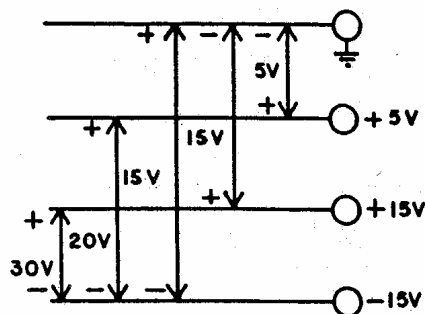


Figure 3