coupling between each output and sense lead. This can be done either by twisting the leads together, or by using coaxially screened cable (sense through the inner). An electrolytic capacitor directly across the load connection point may also be beneficial.

The voltage drop in each output lead must not exceed 0.5 volts.

4.8 Current Meter Damping

The digital meters have a reading rate of about four readings per second (as fast as the eye can follow) and a damping time constant of 20msecs, thus providing virtually instantaneous response to reading changes.

If the unit is used to supply a load varying at a rate faster than about 0.5Hz, difficulty may be experienced in interpreting the current meter readings. This problem can be alleviated by turning on the switch marked 'damping'. This increases the current meter damping time constant to 2 seconds with the result that the meter will tend to read the average current flowing rather than following the variations. This facility should only be used when necessary since it greatly increases settling time and reduces absolute accuracy.

4.9 Series or Parallel connection with other units

The unit can be connected in series or parallel with others to produce higher voltages (maximum 300 volts) or higher current outputs.

It should be noted that the unit can only source current and cannot sink it, thus units cannot be series connected in anti-phase. Where several units are connected in parallel, the output voltage will be equal to that of the unit with the highest output voltage setting until the current drawn exceeds its current limit setting, upon which the output will fall to that of the next highest setting, and so on.

In constant current mode, units can be connected in parallel to provide a current equal to the sum of the current limit settings.

4.10 Application of an external voltage source to the output

In common with all series regulated single ended power supplies, the unit is not capable of sinking current provided from an external source. If a voltage greater than the set output voltage of the unit is applied from an external source, the internal regulator will turn off, no current will flow, and the voltage meter will read the applied voltage. No damage will result providing the applied voltage does not exceed 50 volts. Application of voltage greater than this is prohibited.

If a reverse voltage is applied, this will be clamped by an internal reverse protection diode. The reverse current should not exceed 1 amp.

5 OPERATING INSTRUCTIONS - REMOTE MODE

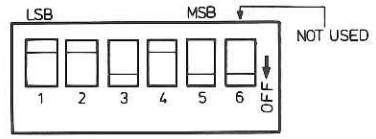
With the mode switch in the 'Remote' position, the voltage and current levels are set by the GPIB control module and the voltage and current setting knobs have no effect. An 'anti-tamper' cover is available to prevent unauthorised switch operation. See section 3.

5.1 Connecting to the GPIB

The unit conforms to the IEEE-488 (1978) standard. Connection to the bus is made using the 24 way IEEE-488 standard socket on the rear of the unit. For IEC-625 systems a converter cable must be used.

The user must choose a unique address for the unit and set it using the switches on the rear panel.

The example address shown is 01011, ie, decimal 11. Thirty one addresses are possible, address 11111 is not allowable.



Should it be required to connect the unit to an operating GPIB system without disrupting operation then the unit should be powered up before the GPIB cable is plugged in. Operating the AC line power switch with the unit connected to the GPIB will cause the Bus to be disabled for a period of up to one second. On twin units the power for the GPIB control module is controlled by both AC line switches.

In a twin power supply the GPIB control module controls both supplies via its single device address.

5.2 Controlling the power supply from the GPIB

The power supply can be combined with other instruments (one of which must be a Bus Controller) to form a GPIB system. Once its address has been defined the power supply can be Addressed to Talk or Addressed to Listen by the Bus Controller.

When Addressed to Listen the unit enters the Listener Active (LA) state and the Listen Lamp illuminates. Any data bytes placed on the Bus by an active talker are accepted. If they form a valid command string they will be acted upon. If not they will be ignored. The LA state may be cancelled by the Unlisten command.

When Addressed to Talk the unit enters the Talker Active (TA) state and the Talk Lamp illuminates. The unit will then place a string of characters on to the Bus, representing the present status of the power supply (or supplies). The TA state may be cancelled by the Untalk command.

The unit will respond to the following GPIB interface commands:

MLA	—	My Listen Address. On receipt goes to LA state.
DCL	—	Device Clear. Resets unit to initialised state.
SDC	—	Selected Device Clear. Only when Addressed. Function as DCL.
SCG	—	Secondary Command Group. See Section 5.8.
UNL	—	Unlisten. Cancels LA state.
MTA	—	My Talk Address. On receipt goes to TA state.
UNT	—	Untalk. Cancels TA state.
IFC	—	Interface Clear. Cancels both LA and TA states.
SPE	—	Serial Poll Enable. Used in conjunction with MTA to place a status byte onto the Bus.
SPD	—	Serial Poll Disable. Cancels effect of SPE command.
PPE	—	Parallel Poll Enable. Used to identify device requesting service.

The unit will output the following messages onto the GPIB:

DAB	—	Data Byte. ASCII character forming part of a string representing status information.
SRQ	—	Service Request. In response to conditions defined in section 5.10.
RQS	—	Requested Service. Single data byte giving status of interface.
PPRn	—	Parallel Poll Response n. Pulls DIO line n true in response to PPE, see section 5.11