The features and capabilities described below are applicable to many, but not all, of the Hewlett-Packard single-output system power supplies described on the following pages. Please refer to the page that describes a specific model to determine whether a feature is actually available for a specific model.

Single-Output System Power Supplies

System power supplies are designed primarily for use in automatic test systems, where a computer programs the power supply to the initial voltage or current for the component, subassembly, or product under test, and may vary the voltage and current throughout the test to simulate worst-case operating conditions. Front-panel controls are provided to simplify setup and debugging of the test system. System power supplies are often used as lab bench supplies until they are needed as system components.

"One-Box" Solution

Hewlett Packard's HP-IB system power supplies integrate the functions of a power supply, voltage and current programmers, voltage and current readback, status readback, and SRQ interrupts all into a single package. These HP "One-Box" Solution power supplies offer the following inherent advantages:

- **Fully specified performance:** One set of specifications covers the complete power supply, from the HP-IB input to the output.
- **Ease of integration:** The power supply, programmer, current shunt, and DMM are in one box; no additional cabling is required.
- **Reduced system cost:** Everything is in one box so there is no long list of extras to buy, and less rack space is required.
- **Ease of use:** Outputs are programmed directly in volts and amps. Extensive system features like status readback and electronic calibration lead to faster program development and less maintenance time.
- **Load protection:** Overcurrent and overvoltage protection features can be used to shut down the output when dangerous conditions occur, as well as sending SRQ interrupts to the computer.
- **Reliability:** Hewlett Packard's advanced design techniques combined with the integrated "One-Box" approach mean increased reliability backed with a three-year warranty.

Protection for the Unit Under Test

In addition to programmable overvoltage, overcurrent, and overtemperature protection, HP system power supplies offer Discrete Fault Indicator (DFI) and Remote Inhibit (RI). Typically used for emergency shutdown of the test system independent of the HP-IB and controller, these hardware signals allow a group of power supplies to be connected together so that a user-defined fault condition anywhere in the system can trigger an alarm or shut down the system.

Almost any change of state in power supply operation can be used to generate a Service Request (SRQ) to interrupt the controller.

Because inadvertent misconnections or failures elsewhere in your system can occur, HP system power supplies are protected against reverse bias voltage imposed across the output terminals, and the unit under test is protected against open sense leads.

Local lockout can be programmed via the HP-IB to disable the front-panel controls, preventing unauthorized operators from changing a power supply setting.

SCPI Programming Commands

HP-IB commands for all single output system models except the HP 6630 series are implemented with SCPI, the new language standard for programmable test instruments. This standard means that all instruments performing the same function use the same instruction. For example, reading the output voltage directly from the power supply is done with the same commands as for an external multimeter.

The example below shows the self-documenting nature of SCPI instructions. First the power supply is programmed to 15 volts, and then the resultant output voltage and current are read back.

```
VOLT 15
MEAS:VOLT?;CURR?
```

Serial Link Capability

Rather than use two or more HP-IB addresses in systems that require more than one power supply, all single-output system supplies (except the three models in the 6630 series) can use HP's serial link to operate up to 16 power supplies on one HP-IB address. Plus, the low-cost telephone-type cables that interconnect the units can be up to 30 meters long.

Relay Connect/Disconnect and Polarity Reversal

Relays for connecting the power supply to the load and reversing the polarity of the voltage at the load are available on most single-output system models. The HP 6630 Series 100-watt models can be ordered with Option 760 to provide built-in relays. All other higher-power models up to 200 volts and up to 60 amps require external relay accessories, HP Model 59510A Isolation Relay, or HP Model 59511A Isolation and Reversal Relay. The relay accessories allow seamless programming (through the power supply's own HP-IB port) of all sense and load lead connections with controlled sequencing to prevent open sense leads under all conditions.

Down-Programming (Current Sinking) Capability

All single-output system supplies except the HP 6030 series have circuitry that allows sinking (pulling current into the more positive terminal of the supply) to either change or maintain the output voltage. This capability helps the output capacitor on the power supply (or on the unit under test) discharge quickly, even when there is little or no load on the power supply. This can be an important feature in systems that require outputs to be quickly discharged before the UUT is removed from the fixture, preventing arcing and contact degradation in the system test head fixture.

Calibration

Calibration can be accomplished on many models without removing the power supply from the rack, and it can be done with or without a computer. A user-specified password minimizes accidental access to the calibration routines, which coordinate the entry of calibration constants derived from measurements of voltage, current, and overvoltage settings with an external reference voltmeter.

Store/Recall States

Most single-output system supplies have the ability to store and recall five complete power supply operating states in nonvolatile memory to save programming time. One of these five states is automatically recalled at power-on so that the supply can be initialized to any desired state. Each state specifies voltage and current settings, overvoltage and overcurrent protection settings, output protection delay time, external relay position and polarity, and the digital output port data.

Fan Speed Control

The HP 6650 and 6670 series protect nearby users from unnecessary acoustic noise by automatically slowing down the power supply's internal cooling fan when loading and ambient temperature permit.