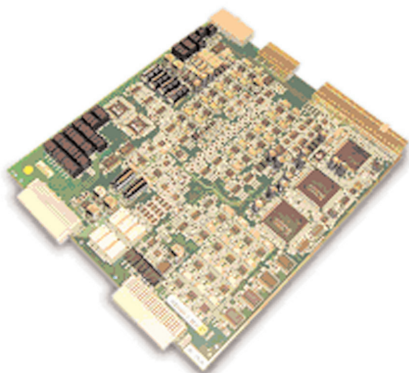


5800 Series

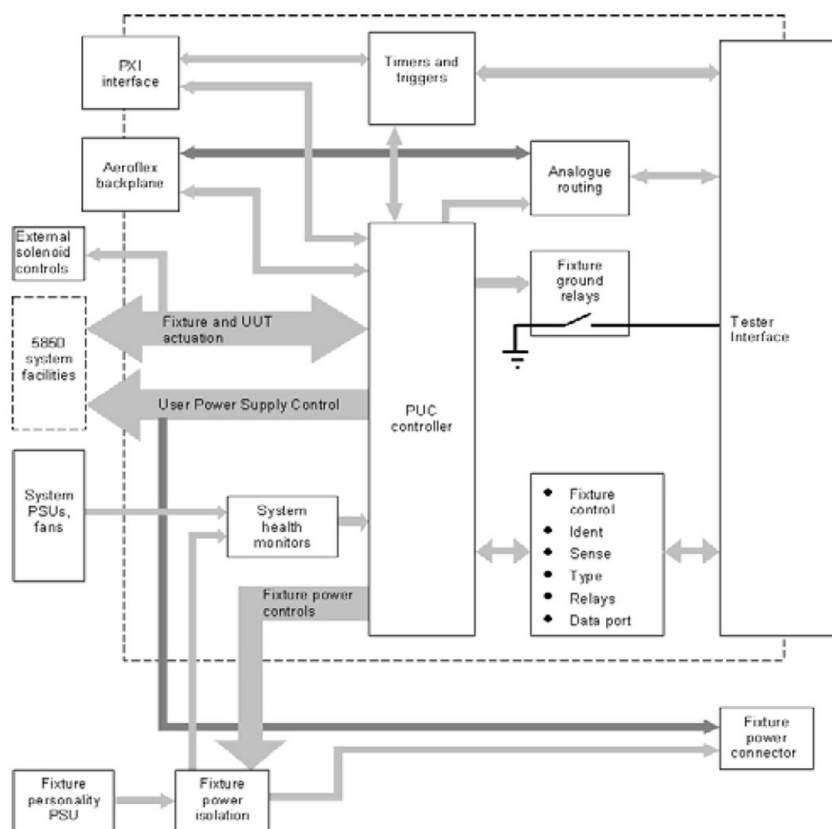
Power and Utility Card (PUC)



The Power and Utility Card provides the main services interface to the 5800 Series of test systems.

- Fixture Power Routing
- Manual Test Probe Interface
- External Instrumentation Routing
- Temperature Monitor
- Fixture and UUT Actuation
- Fixture Signal Switching and Control

The Power and Utility card is an essential part of any 5800 Series test system, it contains all fixture utilities such as fixture identification, control, sense, type, relays, power, actuation, UUT PSU isolation control and user interface.



MODULE FUNCTIONALITY

FIXTURE CONTROL, SENSE, TRIGGER AND RELAYS

Control lines

This is a group of twelve open drain output signals that are normally used to operate further relays, solenoids etc within the test fixture.

Fixture Identification

This is a group of 16 digital input signals from the fixture, which cause register bits to be asserted when grounded. The fixture identification, which is intended to identify the fixture, can be regarded as fo hexadecimal digits.

Sense lines

This is a group of eight digital input signals from the fixture, which cause register bits to be asserted when grounded. Used for very basic communication with the tester. For example, a fixture could be built with a switch to change the limits on a particular test. This might be communicated to the target program through these bits from a toggle switch on the fixture.

Fixture Interface Type

This is a group of eight digital input signals from the fixture, which cause register bits to be asserted when grounded. These are coded to indicated fixture size, secondary interface, fixture services required etc.

Data Port

This port routes 8 digital output lines and a control line to a fixture for general-purpose use. An example would be the control of a personality card inside a fixture that requires data to be asserted and then the control bit toggled to latch this data on a target circuit.

Fixture and UUT Actuation

These controls allow the operation of the fixture engage mechanism and control for a dual bay UUT vacuum fixture.

There are two outputs and one input to drive the fixture engage/release mechanism, in addition two more outputs are provisioned for dual bay actuation. This is particularly useful in the case were there might be a functional and an in-circuit engage level fixture (dual height fixture).

The PUC also has two outputs to drive the vacuum valves for a dual bay fixture and three sense inputs (six signals) to detect three states of the fixture interface, "fixture present", "fixture engaged" and "fixture released. There are two signals per state for electrical de-bounce purposes.

For each part of a dual bay system there are two fixture sense inputs to detect the state of a dual height fixture. Each sense has two inputs for electrical de-bounce purposes.

Timers and Triggers

Separate trigger inputs and outputs are provided. Trigger events generated by the system can be used to trigger external instrumentation eg. an oscilloscope. Trigger events from the UUT may be used to trigger the system or routed onto the PXI trigger bus.

Fixture Relays

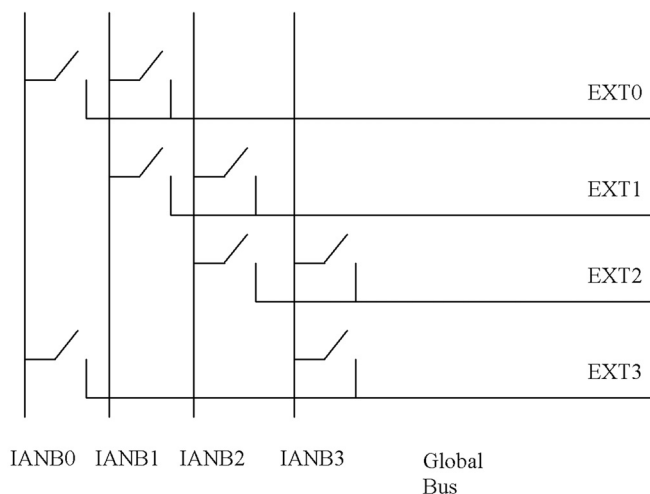
These are general-purpose relays (20 relays) the contacts of which are available at the fixture interface to control circuitry in the fixture.

ANALOG ROUTING

External access

Four connections are available for connecting external instrumentation

to the internal system measurement bus. Each connection is made to a pair of analog bus lines via relays. The relay topology is such as to allow the relays to be self-tested.



Analog access

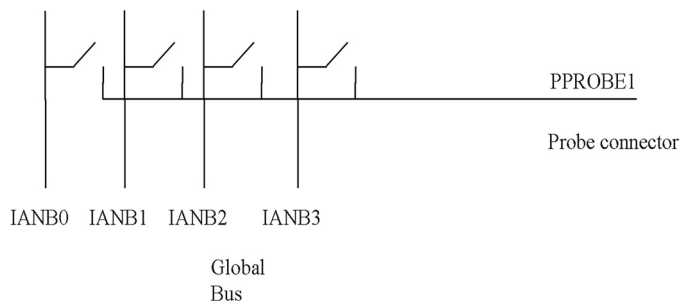
Four switched global analog bus lines are routed to the fixture interface mainly for use in system selfcheck. The relay topology is such as to allow the relays to be self-tested.

Fixture Ground relays

Eight pins are routed to ground from the fixture interface via a relay (4 double pole relays altogether).

Another four pins (2 ganged relay) are connected to a controlled discharge circuit consisting of a passive resistance path to ground. When the voltage gets to within a specified voltage window of GND a flag is set.

FIXTURE POWER CONTROLS



The PUC controls an internal distribution card that switches and monitors the fixture power supply to a connector at the tester interface. The supplies available are :-

- +/-15 V (relay isolated)
- +5 V (relay isolated)
- +24 V (relay isolated)

As these supply is external to the PUC their full specification is detailed in the 5800 Series datasheet.

User Power Supply Control

The UUT Power Supplies are programmed from the USB port on the controlling PC and are routed via the Distribution Card that has 8 isolation relays controlled from the PUC.

System Health Monitors

All the system power supply voltages, and internal & external fixture supply voltages, are routed onto the global analog busses so they can be monitored for self-checking purposes.

MISCELLANEOUS FUNCTIONS

Probe interface

This switches a line from the global bus to a passive probe interface connection on the tester backplane.

Button Sense

This consists of twelve control dual input lines that feed onto the tester backplane, to detect the operator panel button actuation. The button actuation controls such functions as Fixture Engage/Disengage, Vacuum control, Start, Abort, Yes, No and Reset.

Button LEDs

The PUC supplies twelve control lines that drive each LED fitted to the operator panel buttons.

Light beacon control

There are four control lines that drive onto the tester backplane such that the correct light sequence indication can be shown on the test system during program execution, should a warning light beacon be fitted.

Temperature monitoring

There is an interface for two digital temperature sensors. One of the sensors is located on the PUC itself to monitor system temperature and ensure measurement tracability and the other can be mounted in the fixture to monitor ambient temperature or specific device temperature during test. This second sensor has a four line interface routed via the fixture interface and could be used for example to ensure a resistive power load is not overdrive.

SPECIFICATION

FIXTURE INTERFACE SIGNALS

Fixture Relay

20 single pole relays with a contact rating of 0.5A max.
(10W max switching power) Resistance $0.5\Omega \pm 0.18\Omega$

Fixture Identification

16 bit fixture identification code. LVTTTL input with $10K\Omega$ in series and $10K\Omega$ to +3.3V pull-up

Fixture Control

12 open drain output +25V max OFF, < 0.1V at 100mA max ON

Fixture Sense

8 fixture sense inputs to the system. LVTTTL input with $10K\Omega$ in series and $10K\Omega$ to +3.3V pull-up

Fixture Type

8 fixture sense inputs to the system. LVTTTL input with $10K\Omega$ in series and $10K\Omega$ to +3.3V pull-up

Fixture Data

8 LVTTTL fixture data outputs from the system

Analog Sense

Relay isolated to the global analog bus

Fixture Supply

Used for powering fixture circuitry +5V unregulated, 1A switched

Fixture Supply

Used for powering fixture circuitry +15V, 100mA switched

Fixture Supply

Used for powering fixture circuitry -15V, 100mA switched

Fixture Temperature Sensor

LVTTTL output. The TEMP signals are to interface with a temperature sensing device in the fixture

Trigger Output

Four 50R line drivers with up to 100mA drive/sink

Trigger Input

Four LVTTTL input with $10K\Omega$ in series and $10K\Omega$ to +3.3V pull-up

Fixture Ground

Double pole change-over relay 2A 60Ω

Fixture Ground Discharge

Resistive discharge path to GND

Resistance value 1kR 10W

Monitor input impedance 10 M Ω

Monitor threshold +/-100mV

GND

Fixture circuitry 0V. Used to generate an ident. and reference for the fixture power supplies

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