

VIAVI

ATE5800 Series

Power and Utility Card (PUC)

The Power and Utility Card provides the main services interface to the ATE5800 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 ATE5800 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

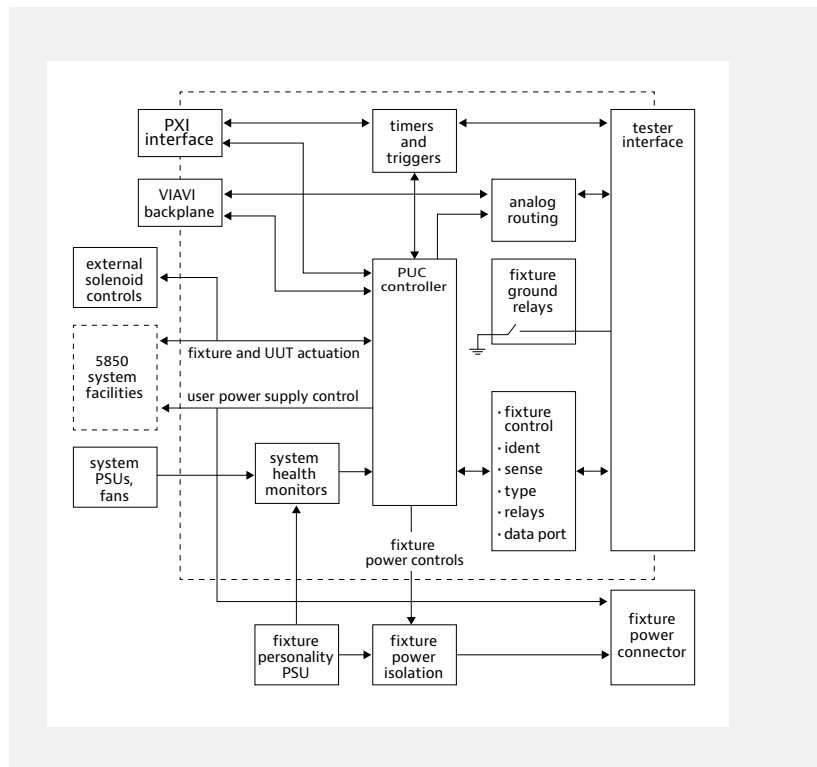
This is a group of twelve open-drain output signals that are normally used to operate further relays, solenoids, etc within the test fixture.

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 fohexa decimal 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 debounce 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, for example, 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).

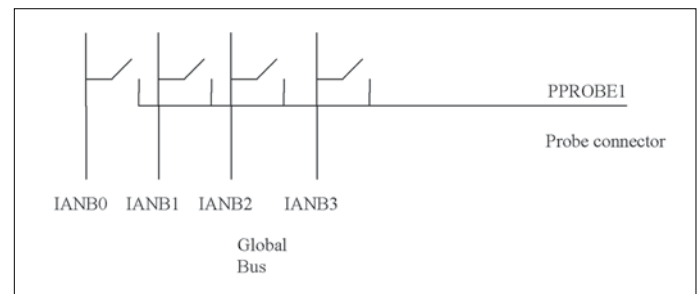
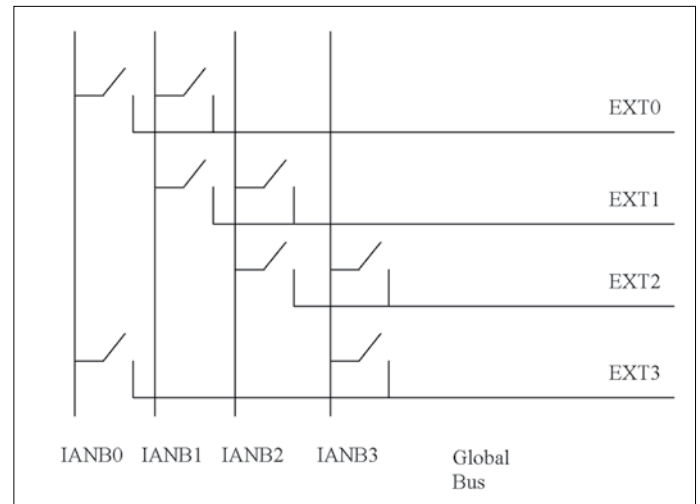
Another four pins (2 ganged relay) are connected to a controlled discharge circuit consisting of a passive resistance path to ground. When the voltage gets to within a specified voltage window of GND a flag is set.

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 ATE5800 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.

Specifications

Fixture Interface Signals		
Fixture relay	20 single pole relays with a contact rating of 0.5 A max. (10 W max switching power) Resistance $0.5 \Omega \pm 0.18 \Omega$	
Fixture identification	16 bit fixture identification code. LVTTTL input with $10 K\Omega$ in series and $10K\Omega$ to +3.3 V pull-up	
Fixture control	12 open drain output +25 V max OFF, < 0.1 V at 100 mA max ON	
Fixture sense	8 fixture sense inputs to the system. LVTTTL input with $10 K\Omega$ in series and $10 K\Omega$ to +3.3 V pull-up	
Fixture type	8 fixture sense inputs to the system. LVTTTL input with $10 K\Omega$ in series and $10 K\Omega$ to +3.3 V 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 +5 V unregulated, 1 A switched	
Fixture supply	Used for powering fixture circuitry +15 V, 100 mA 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 100 mA drive/sink	
Trigger input	Four LVTTTL input with $10 K\Omega$ in series and $10 K\Omega$ to +3.3 V pull-up	
Fixture ground	Double pole change-over relay 2 A 60Ω	
Fixture ground discharge		
Resistive discharge path to GND	Resistance value	1 kR 10W
	Monitor input impedance	10 M Ω
	Monitor threshold	+/-100 mV
GND	Fixture circuitry 0V. Used to generate an ident. and reference for the fixture power supplies	