



Sinneslöschen

SYSTEMS CORPORATION

INTERNAL ENGINEERING RECORD

PB-81 Engineering Summary

Experimental visual systems test platform - engineering development summary

Record: 81-PB-01
Project: PB-81
Revision: A
Date: February 11, 1981
Archive Status: TRANSFERRED

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1. Document Control

Field	Entry
Project designation	PB-81
Record class	Engineering Summary
Program category	Experimental / OEM Visual Systems
Engineering status	Development and field evaluation
Commercial release	None
Primary development site	Sunnyvale Research & Development Center
Field support office	Northwest Field Operations - Beaverton, Oregon

This summary defines the engineering objectives, principal hardware elements, interface assumptions, test methods, and service provisions used for the PB-81 experimental visual systems platform. It provides a common reference for laboratory integration, configuration control, and limited field evaluation.

- Engineering Development - Sunnyvale
- Display Systems Laboratory
- Human Factors Engineering
- Northwest Field Operations
- Documentation Services - project file

2. Project Scope and Objectives

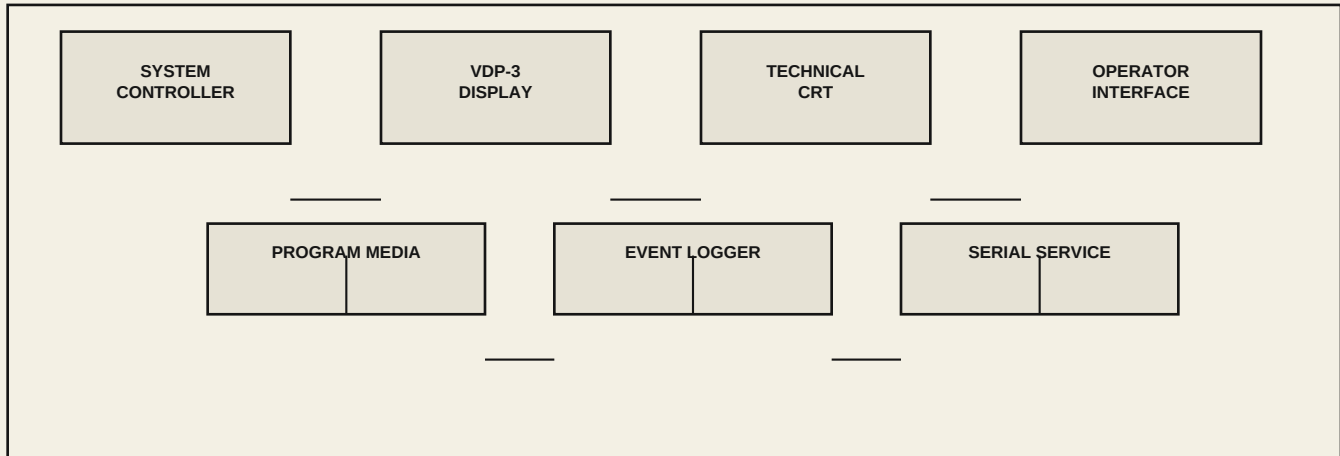
PB-81 was established as a configurable visual-systems test platform for evaluating the interaction of programmable display hardware, external operator controls, response measurement, and project-supplied test software. The platform is intentionally modular so display timing, control layout, and program revisions can be changed without redesigning the complete system.

- Display timing and stability under programmable operating conditions.
- Vector presentation methods and programmable display timing using VDP-3 hardware.
- Synchronized operator input and repeatable event-time measurement.
- Response-time measurement under controlled display and input sequences.
- External control interfaces for project-specific operator assemblies.
- Removable program loading for rapid substitution of test sequences.
- System-event logging for later engineering review.
- Local and remote service communication for field diagnostic use.

PB-81 is not a standard product and does not define a production enclosure, fixed operator-control layout, commercial software package, or customer sales configuration.

3. System Architecture Overview

The baseline PB-81 architecture combines a modified Sinneslöschen system controller with VDP-3 display-processing hardware, a technical CRT display, project-specific operator controls, removable program media, event-recording circuitry, and a serial service interface. PB-81 predates the Sinneslöschen System Bus and contains no SSB hardware.



- The controller manages program execution, data movement, operator-input sampling, and service communication.
- VDP-3 generates programmable vector output and provides display timing functions required by the installed CRT configuration.
- The operator interface is electrically separated from the core controller so control geometry can vary between evaluations.
- The event logger records selected program, display, and input events against a common timing reference.

4. Modified System Controller

PB-81 uses a modified Sinneslöschen controller assembly derived from current 1981 development hardware. Controller revision is not fixed across all configurations and must be recorded with each configuration.

Function	Engineering requirement
Program execution	Load and execute removable project software without permanent installation.
Display command transfer	Provide deterministic command delivery to the VDP-3 interface.
Input acquisition	Latch external operator inputs against the project timing reference.
Event timing	Maintain a common event counter for display, input, and software markers.
Service functions	Provide local diagnostics and serial remote-service access.
Configuration storage	Retain hardware parameters separately from removable program media.

Controller substitutions require an updated configuration record. Memory size, interface-board revision, serial-port configuration, and timing-reference selection are configuration-controlled items.

5. VDP-3 Display Subsystem

The display subsystem is based on the VDP-3 Vector Display Processor. PB-81 uses project-specific interface and timing hardware around the standard processor so approved operating parameters can vary between laboratory and field configurations.

- Programmable line generation and coordinate transformation.
- Vector intensity control and blanking.
- Host-command interface for timed display updates.
- External display-memory interface where required by the installed program.
- Programmable horizontal and vertical timing support for the technical CRT.
- Synchronization outputs used by the event-recording subsystem.

Project-specific display interface boards must be matched to the VDP-3 hardware revision identified in the configuration index. Timing components, oscillator selection, and CRT drive characteristics are not interchangeable without verification.

6. CRT Timing and Display Parameters

PB-81 display parameters are configuration items rather than fixed product specifications. The installed test program may request approved timing sets, but the electrical limits are established by the display assembly and interface hardware.

Parameter	Control / record requirement
Horizontal timing	Configuration record; hardware-limited range.
Vertical timing	Configuration record; hardware-limited range.
Vector intensity	Program-controlled within approved setup limits.
Blanking interval	VDP-3 / interface timing set.
Synchronization phase	Recorded where external event equipment is connected.
Display geometry	Adjusted per CRT assembly and installation.

Field service may restore a recorded timing set but shall not establish new timing values solely to accommodate an unstable display. Timing changes outside an approved configuration require engineering review.

7. Operator Interface

The PB-81 operator interface is external to the core controller and intentionally non-standard. The electrical interface supports synchronized input recording while permitting the physical control arrangement to change between evaluation assignments.

- Momentary switch closures.
- Maintained switch states where required by installed software.
- Two-axis analog or encoded position input through project interface hardware.
- External trigger or ready input from associated laboratory equipment.
- Service-control inhibit input for diagnostic operation.

Operator inputs are latched against the same event reference used by display and program markers. Debounce and conditioning values are configuration-controlled because response measurements can be affected by excessive filtering.

8. Response Timing and Event Measurement

Response measurement correlates defined display or program events with latched operator inputs. The event mechanism supports engineering comparison between configurations and is not specified as a calibrated laboratory timer unless used with the appropriate reference equipment.

Event class	Typical source	Recorded value
Display event	VDP-3 synchronization or program marker	Event counter / marker ID
Input event	Operator interface transition	Event counter / input channel
Program event	Software marker	Event counter / software code
Service event	Diagnostic command or mode change	Event counter / service code
External event	Laboratory trigger input	Event counter / external channel

Records collected after a timing fault, display synchronization fault, input-interface fault, or service-mode interruption must be marked invalid for comparative analysis.

9. Program Media and Software Loading

PB-81 loads project software from removable media so evaluation sequences can be changed without altering controller hardware. Archive records identify multiple software revisions; the program contents themselves are not part of the current electronic archive.

- Each medium carries a project designation and software revision identifier.
- Applicable controller and interface configurations are listed in the media index.
- Program media are write-protected after release for field evaluation.
- Unidentified or unindexed media are not used for comparative evaluation.
- Service diagnostics may be loaded separately from evaluation software.

Project records permit both Sinneslöschen-developed components and externally supplied test-software components. No standard commercial Sinneslöschen software package is designated for PB-81.

10. Event Logging and Data Collection

The event logger provides a chronological record of selected system activity for engineering review. Logged information supports configuration comparison, fault analysis, and evaluation of operator-response sequences.

Record	Content
Session header	Configuration identifier, software revision, controller revision, timing set.
Display marker	Program marker and event count.
Input transition	Channel, state, event count.
Diagnostic event	Service command, subsystem status, event count.
Fault marker	Detected synchronization, media, interface, or controller fault.
Session end	Program termination state and closing service status where available.

Log data may be retained locally or transmitted through the service interface during diagnostic activity. Field-evaluation personnel preserve the original session identifier when transferring logs to engineering.

11. Serial Service Interface

PB-81 includes a serial service interface intended for local diagnostic equipment and selected remote-service procedures. The interface is not an operator programming port and remains under service control during field evaluation.

- Read controller and display-subsystem status.
- Retrieve configuration identifiers and selected event-log information.
- Verify installed program revision and media status.
- Run approved memory, input, display-interface, and communication tests.
- Restore approved configuration parameters following service replacement.

Where communications equipment is provided, the serial service interface may be connected through telephone facilities for remote diagnostic use. Remote operation is limited to approved service commands and does not authorize creation of new evaluation configurations.

12. Evaluation Method

PB-81 evaluation is configuration-based. Results are meaningful only when hardware, software, display timing, operator controls, and service state associated with a session are recorded together.

Step	Required action
1	Verify controller, VDP-3, display, and operator-interface revisions.
2	Load approved configuration parameters and verify display stability.
3	Install indexed project media and record software revision.
4	Run service diagnostics and clear unresolved faults.
5	Execute prescribed evaluation sequence.
6	Collect event log and associated observation record.
7	Repeat only under unchanged configuration unless comparison is intended.
8	Close session and record equipment/service disposition.

When two configurations are compared, only one controlled parameter should be changed where practical. Multi-parameter changes are recorded as system-level comparisons.

13. Configuration Variants

PB-81 exists in several engineering configurations rather than as a single fixed assembly. The configuration index is the controlling record for installed hardware and software.

Configuration	Purpose	Location / control
1	Engineering development and subsystem integration	Sunnyvale R&D
2	Human factors / interface evaluation	Sunnyvale R&D
3	Display-system field evaluation	Northwest Field Operations
Additional	Temporary field or engineering configurations	As assigned by configuration index

A configuration number does not guarantee component interchangeability. Controller revision, VDP-3 revision, display-interface hardware, CRT assembly, operator interface, timing set, and program-media revision form a complete configuration package.

Field configurations are temporary engineering installations and are subject to recovery, reassignment, or return to engineering inventory after evaluation.

14. Reliability and Service Considerations

Because PB-81 combines standard components with project-specific assemblies, service procedures distinguish replaceable standard hardware from configuration-controlled project hardware. Field repair restores the recorded configuration rather than introducing unreviewed substitutions.

- Verify supply voltages and controller startup diagnostics.
- Confirm VDP-3 and display-interface revision compatibility.
- Confirm stable CRT timing using the approved timing set.
- Exercise operator inputs and verify event-latch operation.
- Verify removable-media identification and load behavior.
- Confirm serial service communication and session-record identification.

Field operation requires suitable ventilation, stable mains power, controlled access to service connections, and a technical-equipment environment. PB-81 is not qualified for unattended industrial operation.

15. Preliminary Engineering Findings

Initial integration work demonstrates that the PB-81 architecture can support repeatable display sequences, synchronized operator input, event logging, and service diagnostics while allowing substantial variation in physical interface and installed program media.

- Display stability across alternate CRT assemblies and approved timing sets.
- Consistency of event timing with alternate operator-interface assemblies.
- Serviceability of field configurations without direct engineering support.
- Compatibility of program-media revisions with controller and interface changes.
- Completeness of field session closure and equipment-disposition records.

No production-release recommendation is made by this summary. Continued work is controlled through the configuration index, field-evaluation index, and associated service records.

16. References and Record Approval

Reference	Title / relationship
DS-VDP3-02	VDP-3 Data Sheet
RM-VDP3-01	VDP-3 Programming Reference
AN-VDP3-04	Vector Display Integration
DS-HFC12-01	HFC-12 Operator Response Interface Data Sheet
81-PB-02	PB-81 Configuration Index
81-PB-03	PB-81 Field Evaluation Index
81-PB-04	PB-81 Service Record - indexed service reference
PB81-PH-02	PB-81 Field Configuration Photograph - image record

Function	Disposition
Engineering Development	Released for project use
Display Systems	Technical review complete
Human Factors Engineering	Interface / response provisions reviewed
Field Service	Service provisions accepted for controlled evaluation

Transferred to the Sinneslöschen Historical Product Archive as part of the 1981 engineering-record transfer. No production release for PB-81 is recorded.