

# TRIDENT COMPUTER RESOURCES, INC.

## ▲AUTODYNAMICS™

### INSTRUCTOR STATION

To meet the broad needs of today's Simulator Training environment, AUTODYNAMICS™ (AUDY™) has developed the most powerful, flexible and user-friendly **SIMULATOR INSTRUCTOR STATION** available. The AUDY™ Instructor Station serves as the instructor's window to the training session, and provides the means of controlling the session, measuring the student's performance, and recording the results of the training session.

#### **Instructor Complex**

The success of any training program is dependent on the effective development and delivery of training exercises. *The AUDY™ Instructor Station meets these demands, and is . .*

- **Powerful:** The features of the AUDY™ Instructor Station are unmatched in the industry.
- **User Friendly:** The AUDY™ Instructor Station is windows based with "click and drag" functionality.
- **Cost-Effective:** Standard hardware and software are used as the completing platform.
- **Multi-User:** AUDY™'s optional and exclusive multi-view instructor console allows one instructor to control more than one independent training sessions.
- **Automatic:** AUDY™, the innovator in pre-programmed scenarios, offers Automatic Training exercises (ATE) as an option.
- **Printing:** A complete report documentation package, including printer, is provided with every simulator system.
- **Test Evaluation:** Trainee Performance Monitor (TPM) measures and documents the student's performance on any exercise.
- **Instrumentation Override:** Instrumentation Override is an option which allows the instructor to override analog and digital I/O to the student operator station. Thus introducing instrument and transmitter errors to every DCS point and control valve.
- **Trends and Graphics:** Process trends and graphics provide powerful tools for the Instructor to monitor and manipulate the training session.
- **Flexible:** The AUDY™ Instructor Station may be configured to change the simulator system configuration and operator stations types without the need for computer expertise. All functionalities are fully expandable to meet our client needs today and tomorrow.
- **Instructor-Less Training:** AUDY™ Off-Hours Training (OHT) is an option you can conduct preprogrammed training sessions without the need of an instructor.
- **Field Operator Station:** The Field Operator Station (FOS) permits training of outside operators at a separate training station and frees the instructor to train, not operate the simulator.

## Instructor Station Features

- **Programs:** The AUDY™ Instructor Station has no limitations on the number of simulations available to the instructor.
- **Modes of Operation:** Operate, Freeze, Program Condition, Initialization, and Replay.
- **Variable Time Scales:** Time Scales from slower to faster than real time program operation.
- **Snapshots:** Process conditions may be saved and recalled later by the Instructor.
- **Backtracks:** Process conditions are saved automatically at user-defined time intervals, and made available for recall by the Instructor.
- **Replay:** Available on emulated operator stations and selected DCS, the Replay feature allows the Instructor to reinitialize and replay the simulator to a previous condition during the training session.
- **Faults:** Digital malfunctions are available with time delay capability.
- **Instructor Variables:** Analog malfunctions and/or boundary conditions with time delay and ramping capabilities can be set by the Instructor.
- **Field Operated Devices:** Devices normally manipulated by outside operator may be simulated from the DCS display.
- **Process Variables:** Variables may be monitored, trended and logged.
- **Non-Design Condition Summary:** A single screen quickly informs the instructor of any malfunctions currently in use.

## Advanced Training Software™ (ATS)

- **AUDY™ Print Pack Software:** Controlled from the Instructor Station, Hard Copy Reports of the following are provided by the AUDY™ Print Pack software:
  - Event Logging: A time stamped log of all operator and instructor actions.
  - Process Variable Logging: Up to 10 process variables may be logged at a user defined time interval.
  - Process Report: The instructor can print a complete process summary report..
  - Alarm Logging: A time stamped report containing alarm activation, acknowledgment and return to normal (Full Function Direct Connect Systems utilize DCS alarm logging capabilities).

*Note: AUDY™ Print Pack is a prerequisite for ATE and TPM.*

- **Automatic Training Exercises™ (ATE):** ATE allows the instructor to pre-program training exercises or training scenarios and have them executed without being at the instructor console. ATE helps the instructor:
  - Develop and execute consistent, repeatable training sessions.
  - Document student performance consistently.
  - Create ATE scenarios on a simulation program basis.
  - Spend more time training, less time operating the simulator.

In general, any function the instructor can perform at the instructor console can be programmed as a command in the ATE file.

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***Each ATE action may be:***

- Non-conditional (Time based execution)
- Process variable value conditional
- Process variable time conditional
- ATE files can be chained for longer or more complex exercises.

***ATE commands are:***

- Freeze/operate the simulation
- Recall initial condition or snapshot
- Enable/disable/ faults
- Enable/disable/ramp instructor variables
- Change program time scale
- Enable/disable data, event and/or alarm log, TPM
- Print process report and TPM report
- ...And More

• ***Trainee Performance Monitor™ (TPM):***

User selected process variables can be monitored with specified high and low limits. The computer automatically monitors these during the course of the training variables session. A report can be printed which summarizes the operator's performance, including:

- Total simulation time
- High and low process variable value attained
- Selected high and low process variable limits
- Number of times process variables out-of-limits
- Longest duration process variable out-of-limits

• ***Text Message Software for ATE:*** The Advanced Training Software (ATS) package known as Automatic Training Exercise (ATE) has a feature that allows programmable text messages, written as part of the exercise, be transmitted to the operator screen. The instructor may send text messages to the operator providing directions, cautions, praise, advice or any other information desired.

This powerful feature thus provides a visual or audio stimulus to the student reinforcing or criticizing operator's response and/or action, and creates a learning session as well as a training session.

Note: Since actual Distributed Control Systems (DCS) do not permit text messaging onto their systems, ATE text messages can be transmitted to a color text terminal or to the Field Operator Station. Either could be located adjacent to the Operator Station. This allows the trainees to clearly view the messages as they occur.



**Optional -Advanced  
Training Software™ (ATS)**

• ***Multi-User:*** The AUDY™ Multi-User Software permits simultaneous and completely independent operation of each simulation program or different simulation programs. Each can operate different simulator programs and independent control system.

• ***Instrumentation Override:*** AUDY™ Instructor Station has an Instrumentation Override Feature which allows the instructor to manipulate any DCS input or output via a menu selection. This function allows the instructor to simulate transmitter failures, false “ghost” alarms, broken switches, instrumentation calibration errors, stuck valves, etc. This powerful tool essentially permits the Instructor to create any fault of malfunction possible.

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- **Field Operator Station (FOS):** The Field Operator Station (FOS) includes a monitor and personal computer (PC) linked to the simulation computer via ethernet. It can be configured to include non-DCS field operated equipment, ESD/Interlock Panels or other special controls.

The Field Operator Station provides additional functionality since it allows for the handling of key non-DCS control functions (that are the responsibility of a field operator and which have significant impact on plant operations). Thus, both the control room operator trainee and the field operator learn when certain actions must be taken and the significance that these actions have on the operation of the process. Operation of the FOS is via live data presented on displays and controlled via a mouse and/or keyboard.

- **Off-Hours (Instructorless) Training (OHT):** Allows the Instructor to set-up a student database listing and specify training exercises for each student to access and to practice. Students then log onto the simulator using their own account/password and the off-hours training program automatically runs the exercises scheduled by the Instructor. The results are saved in a student retrieval file for later printout and review.

*Note: AUDY™ Field Operator Station is a prerequisite for OHT.*

- **ESD Functions:** ESD Functions can be incorporated into the operator station or the field operator station. Displays are generated to “emulate” the ESD pushbuttons switches and status indicators. In this way, the training of operators of ESD cause and effects, resets and overrides can be performed but can be achieved without the significant cost of actual ESD hardware.

- **Engineering Station:** The AUDY™ Instructor Station can also be used as an Engineering Station for the AUDYSIM™ model maintenance and/or development. However, as an alternative, TRIDENT can provide additional networked Engineering Stations for additional workstations for engineering purposes.

- **Instructor Graphics:** Process graphics, similar to those configured on the Operators Station may be generated for the Instructor Station. Live process data, updated approximately every 2 seconds, are displayed in a specific window with targets included to provide access to Instructor Functions (malfunctions, etc.). Instructor Graphics can be translated onto the Instructor Station from the actual DCS graphics using special AUDY™ utility software.

- **Instructor Trends:** Process variable trending is provided at the Instructor Station using high resolution, dot-trending displays similar to those displayed on control systems. The instructor has the ability to trend any process variable, create or modify trend group displays, select the time span for the trend, at the sampling method.

The combination of trends and actual DCS graphics displayed on the instructor console provides an unmatched interface for control and monitoring of a training session.

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