

### AdvaCommand Safeguard Handler

#### Safeguard appears to the user as a single controller station



Transparent duplication means the redundant and fault-tolerant Safeguard safety controller can be operated and programmed like a single controller station.

The Safeguard 400 Series safety controller, with two complete, independent control branches that run in parallel, is the main building block in the Advant Safety System.

AdvaCommand Safeguard Handler for Advant Station 500 Operator Stations offers transparent duplication, which means the operator can see and operate Safeguard as if it was a single controller station.

#### Easy and safe operations

Under normal operation, Safeguard appears to be a single controller station. The operator will only be aware of the total redundancy behind all functions in cases when a discrepancy between the two control branches is detected. In addition, system status and diagnostics for each control branch are presented individually.

#### Simplifies application programming

Application programming (database fill-in and cause & effect logic) is executed as working with a single controller. Identical application programs are downloaded to the two control branches, and the only difference between the branches is their data highway bus addresses, which are set in hardware.

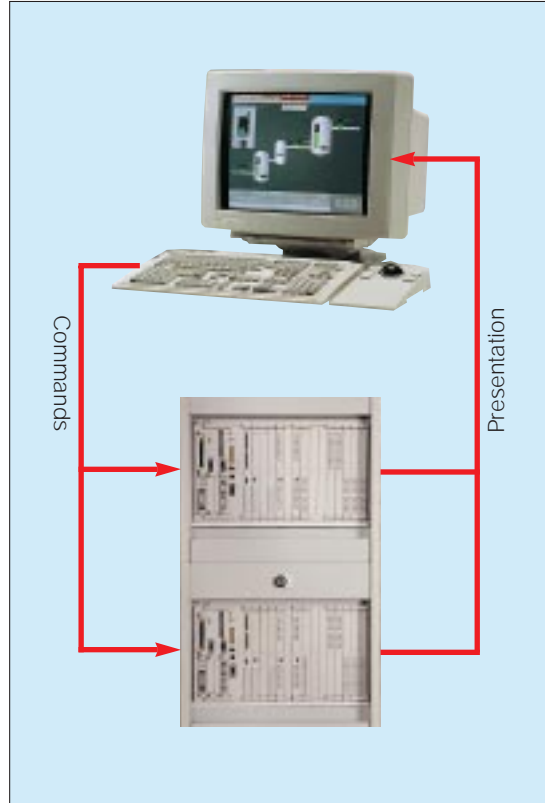
# Dual handling - operator station

The Safeguard 400 controller can be utilized as a stand-alone safety system or integrated in an Advant OCS (Open Control System) network. In both cases, the operator interface is a standard Advant Station 500 Operator Station with AdvaCommand User Interface, expanded with the add-on functionality of AdvaCommand Safeguard Handler.

AdvaCommand Safeguard Handler has two main groups of functions:

- Dual handling start-up synchronization
- Dual handling operator interface

The dual handling operator interface provides transparent duplication - all operator commands are automatically sent to Safeguard's two control branches, and the operator receives a single presentation of objects, status information, alarms and events etc. although information is received independently from both branches.

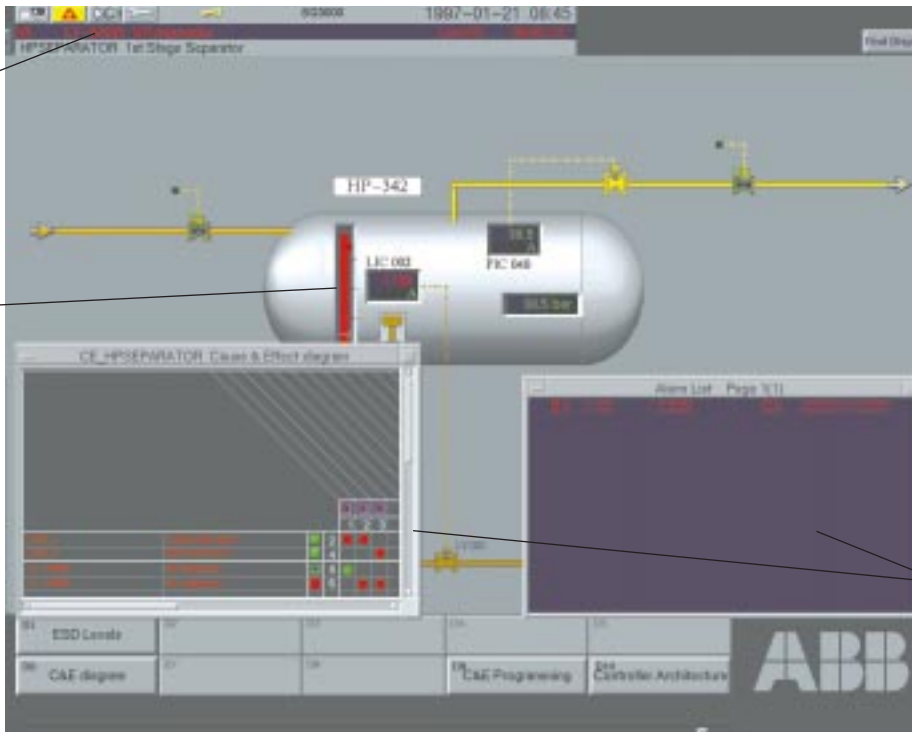


The dual handling operator interface includes the following functions:

- Presentation
- Commands (dialogue)
- Alarm and event handling
- Diagnostic
- TTD (Trend Data)

The latest unacknowledged alarm is presented on all displays

Objects in alarm are shown in red



AdvaCommand Safeguard Handler provides user-friendly, single presentation of information received simultaneously from both control branches.

Using facilities like overlapping windows and dynamic keys, all data available on an object in alarm becomes available on a single screen.

## Alarm and event handling

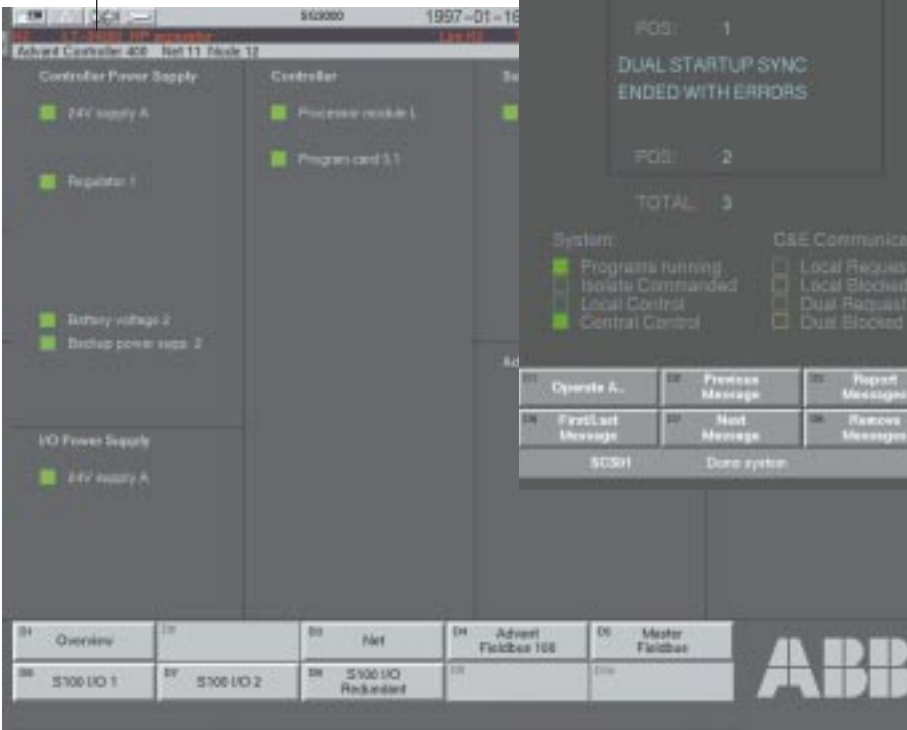
Events and alarms are generated and sent to the operator station from both of Safeguard's control branches. To avoid duplicate entries in lists and printers, alarms are received and stored temporarily in a buffer in the operator station. The first message (event/alarm) is immediately forwarded to the VDU for presentation, but is also retained in the buffer and compared with the message from the other control branch. If a corresponding message is received within 12 seconds, the second report is ignored. If not, the operator is alerted by a flashing screen that the two control branches now have different status.

## System Status and Diagnostics

The operator station gives quick access to the results of Safeguard's extensive test and diagnostics routines. The function Safety System Status Display provides the operator with safety related status information. Status and error messages from the two control branches (A and B) are presented individually in a single screen image. The function Controller Status Display gives detailed diagnostic information about the status and location of every component in the Safeguard controller. Here the control branches (A and B) are presented on separate displays.

The Safety System Status Display presents safety related status messages from the two control branches on a split screen, and the operator can scroll through the message buffer for each control branch.

Status and location of all components are presented for each control branch on individual Safety Controller Status Displays.



In addition to the operator dialogue (shown on the picture), the Safety System Status Display has an access restricted maintenance dialogue.



ABB's Advant Safety System provides customers worldwide with safer operations and at the same time increased plant up-time and productivity.

### Advant Safety System

The Advant Safety System is utilized around the world in industries where production processes can represent a critical danger for people, the environment, facilities and equipment. Typical applications are emergency shutdown systems, equipment protection systems, critical control and fire & gas systems.

### Safeguard 400 Series safety controllers

The Safeguard safety controller is the main building block of the Advant Safety System. Based on a Refined Duplex Architecture (RDA), Safeguard has two independent control branches that run in parallel and offer full redundancy from sensors to the final field element. No single failure in any part of the system will prevent a safety action from being executed.



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