

General Specifications

Model NTPC013 Interlock Status Monitoring



SSJ40B40-01EN

■ PROBLEM

Interlocks are designed to prevent certain production processes from starting or stopping and need to be addressed to avoid production slowdowns and stoppages. Interlocks are triggered but the causes or conditions are difficult to identify. Operators want to resolve these conditions quickly but lack access to accurate, reliable and up-to-date information.

Interlock graphics assist operators in determining these conditions, but these are difficult to maintain and update in line with changing plant conditions. There are often a huge number of documents and graphics that need to be managed and without in-built navigation and logic, this is a difficult process to control.

■ SOLUTION

Interlock Status Monitoring (hereafter referred to as 'ISM') is an application that provides a complete view of all Interlocks, Initiators and Actions in a single web page. It is integrated with DCS Human Interface Screens (HIS) providing quick access to interlock information with logical steps that helps to keep the plant operating.

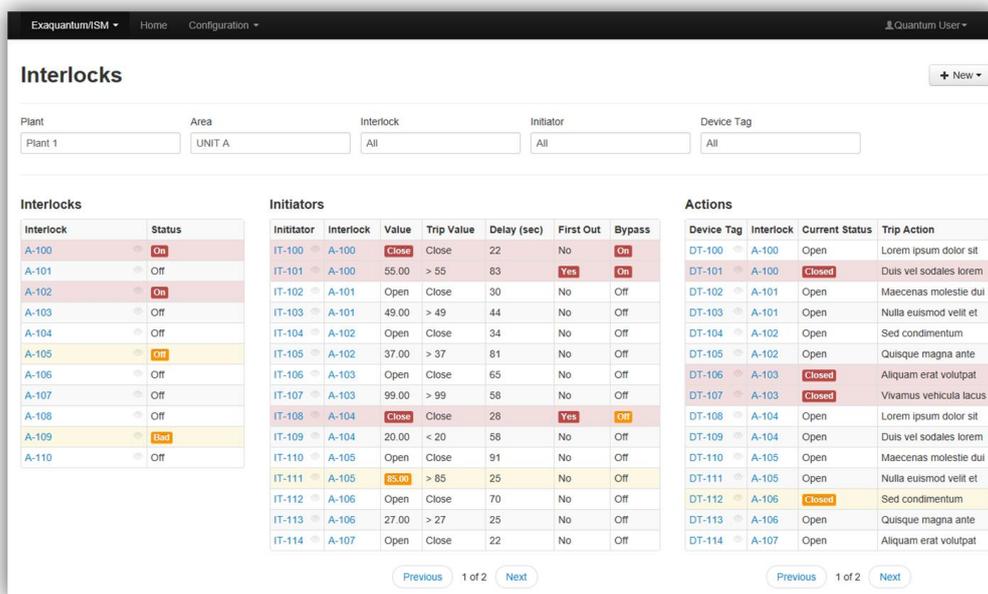
Presenting a consistent view of interlock data via an intuitive user display using smart navigation and the in-built relationship of Interlocks, Initiators and Actions. This replaces the need for any graphic screens to be managed and maintained. Operators are more confident in the information being presented to them as data can be updated and aligned to the control system.

■ BENEFITS

- Improve plant operations with rapid and reliable access to process data and interlocks in a unified environment
- Address production delays determined by hard to find interlock dependencies
- Quickly search through the areas requiring investigation and speed up the resolution of interlock conditions
- Identification of problem areas that assist operators in the resolution of operational issues
- Reduced use of DCS graphics, saving time and freeing up resources
- Single monitoring interface for all interlocks (DCS, PLCs, third party) that reduces risk and improves plant safety

■ KEY FEATURES

- Direct access from CENTUM HIS with immediate filtered access to the relevant interlock information
- Easy to identify active interlocks
- Filter by Plant, Area, Interlock, Initiator and/or Device Tag
- Hyperlinks to drill down through the interlock hierarchy
- Operators can mark important areas or equipment
- Configurable colored data to aid operators
- Interlock configuration via Excel bulk import and export
- Editable web page updated with changing conditions
- Audit Trail of all interlock changes in ISM



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CAPABILITIES

DCS Integration

Direct access from a HIS to a pre-filtered view of interlocks data via a URL link, so accessible directly from the control room or via Internet Explorer.

User Interface

Live update of interlock related data displayed in the Web User Interface. The web page shows information about all Interlocks, Initiators, and Actions configured in the system.

- The interlocks list shows the Name and Status of each interlock
- The initiators list shows the Status, associated Interlock, Valve, Trip Value, Delay, First Out and Bypass of the Initiator

Filtering Data

Page Filters contain a series of autocomplete lists to allow the Interlocks, Initiators, and Actions lists to be filtered by:

- Plant/Area
- Interlock Name
- Initiator Tag
- Device Tag

Filter boxes allow the list to be filtered based on what is typed and selecting an item from the list will filter the page.

Details Dialogue

Interlock, Initiator and Action details are accessible via a single click.

Interlock	Status
A-100	Off
A-101	Off

Interlock Detail

Name: A-100

Description: Plant 1 | UNIT A | Interlock - A-100

Initiators: IT-100, IT-101

Actions: DT-100, DT-101

Buttons: Edit, Delete, Close

The data of high importance is highlighted in ISM and typically shows:

- An error related to the attribute being highlighted e.g. reading the value of a Tag in Exaquantum
- The Status of an interlock when the Status Value is equal to an important value in the Status Tag Values configuration attribute e.g. Active
- The Value of an Initiator when it has tripped
- The First Out of an Initiator when the First Out Value is equal to an important value in the First Out Tag Values configuration attribute e.g. Yes
- The Bypass of an Initiator when the Bypass Value is equal to an important value in the Bypass Tag Values configuration attribute e.g. On
- The Status of an Action when the Status Value is equal to an important value in the Device Status Tag Values configuration attribute e.g. Closed

Quality data can also be highlighted and typically shows:

- A value which is unknown for any reason e.g. during startup of the Interlock Monitor Service before a value has been read from Exaquantum
- A Tag Value which has a quality of Uncertain
- A Tag Value which has a quality of Bad

Interlock	Status
A-100	Off
A-101	On
A-102	Off
A-103	Unknown
A-104	Off
A-105	On
A-106	Off
A-107	Off
A-108	Off
A-109	On
A-110	Bad
A-200	Off
A-201	Off
A-202	Off
A-203	Off

Navigation: Previous 1 of 7 Next

Coloring of Data

Data in the Interlocks, Initiators, and Actions Lists is highlighted based on the importance of the information displayed. Rows in the Interlock, Initiator and Action Lists are colored to show the highest importance of the data displayed

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■ CONFIGURATION

Configuration tools to bulk load configuration data via Microsoft Excel or update the live system configuration through the user interface.

User Interface Configuration

Interlocks, Initiators and Actions can be added, updated and deleted by accessing the appropriate page from the menu on the main web page.

If the user interface is used to configure the system or modify it, then after work is complete it is advised to Export the configuration. This will provide an up to date configuration file, which can be used if any further file-based import is required.

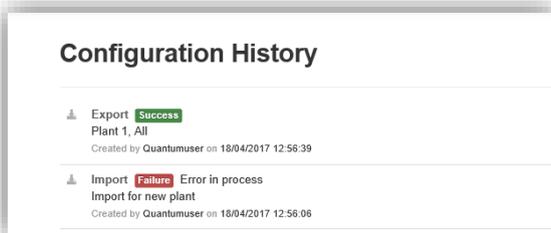
Configuration Import

ISM provides the ability to import Interlock, Initiator and Action configuration from a Microsoft Excel spreadsheet.

Configuration Export

ISM provides the ability to export Interlock, Initiator and Action configuration to a Microsoft Excel spreadsheet. The export file details the current state of the configuration for a plant and/or area, including any changes made via the Interlock, Initiator or Action configuration pages.

The export contains the ISM identifiers for each item. The configuration details for these items can be amended and the file re-imported to change the configuration.



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Configuration History

The Configuration History page shows configuration jobs ordered from newest to oldest. The type, status and comment for the job are shown, along with details of the job creation. This page automatically refreshes every minute to show the latest job details. Once the job has been run, the status is then updated to Success or Failure and the configuration file can be downloaded.

■ DEPLOYMENT

Greenfield

When interlocks are configured for the DCS this information will also be used to configure the ISM solution. The configuration of ISM is prepared in parallel with the interlock configuration of the DCS. This ensures all interlock dependencies are in both the DCS and the ISM application.

Brownfield

ISM needs to mirror the interlock configuration on the DCS. Interlock status signals from the DCS can be used to update ISM through an OPC DA connection. Interlocks status signals can be easily identified by using naming conventions and logic used in the DCS.

If the DCS engineering was done by Yokogawa, it is possible to run a search on all interlock triggers, identifying the naming conventions or logic, which would trigger an action in the DCS. Once all interlocks have been identified, this information can be applied and configured in ISM.

Emerson and Honeywell DCS systems have interlock blocks identified in the Tag descriptions, so the configuration requirement is relatively straightforward to apply to ISM.

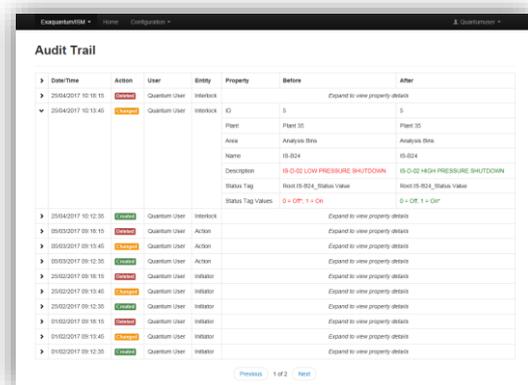
■ AUDIT TRAIL

ISM provides an audit trail of configuration changes made through the web user interface.

ISM records changes made to Interlocks, Initiators and Actions.

The Audit Trail page displays the following audit records:

- The audit records in order from newest to oldest
- The date and time when the change was made
- Whether the entity was created, changed or deleted
- The user who made the change
- The entity that was changed and the properties of the entity before and after the change
- When there is a difference between the value of a property before and after a change
 - the value before the change is colored red
 - the value after the change is colored green



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