Electronic Emergency Shutdown System (EESD)

OFFERING EESD FOR SAFE AND RELIABLE OPERATIONS DURING WELL TESTING OPERATIONS

OVERVIEW

The EESD system is designed for safe emergency shutdowns using remote operation and minimal operator interference. It consists of a state-of-art Allen Bradley 1756 Control-Logix Programmable Logic Controller (PLC) with accompanying Input/Output (I/O) modules and Human Machine Interface (HMI) screen installed inside a compact panel designed to use in safe area.

Process signals from field transmitters and switches installed in hazardous areas Zone are interfaced to PLC system through Exe-certified intermediate junction box.

Prior to operations, the EESD system will be configured in alignment with the Design of Service (i.e., SAFE Chart, Cause and Effect matrix, and Safety Philosophy). The set-points will be entered by the operator in advance of operations. During the operation, the input signals will monitor the parameters, and upon "process up-set conditions," the system will trigger the output signal to initiate alarm(s) and/or action(s) (i.e., tripping shutdown valves).

Overall, the EESD system’s response time from process upset detection to sending a command to the EESD/Annunciator is less than 1 second.

FEATURES

» Includes Safety Integrity Level-2 (SIL-2) certified modules
» Operator HMI screen configured to display:
  ✓ Schematic showing process system
  ✓ Real-time values of process parameters
  ✓ Process Trends
  ✓ Cause and Effect Diagram
  ✓ PLC system status and Alarms (time stamping)
» EESD system designed for Hazardous Area Zone
» Proven and reliable PLC system
» System design in accordance with API RP 14C and IEC 61508
» DNV certification as per OS-E 101

BENEFITS

» Alarm History archive
» Scalable system for future enhancement
» ESD tripping command generation in less than 1 second.
» Hierarchy Security Log-In System

APPLICATIONS

» Exploration and appraisal well testing
» Cleanup and flowback
» Production, inline testing (including multiphase flow metering)
» Extended well testing
» Early production facilities
### Equipment Specifications

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<th>Part Number</th>
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<th>102570960</th>
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#### PLC System
- **Controller and Chassis**: Allen Bradley, 1756-L71 Logix 5571 CPU controller installed in 1756-A10 10 Slot Chassis, TUV certified SIL2 modules
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#### System Enclosure
- **Size (Height X Width X Depth)**: Steel Panel, Size: 500x750x300 mm

#### Process Signal Interface
- **Power Supply Module**
- **Ethernet/IP module**
- **16 Channel Analog Input Module**
- **32 Channel Digital Input Module**
- **16 Channel Digital Output Module**
- **Weidmuller Terminal block-38 Analog, 96 Digital**

#### Operator Interface
- **Allen-Bradley HMI Panel View**

#### HMI System Enclosure
- **Size (Height x Width x Depth)**: Steel Panel, Size: 400x400x250 mm

### Field Signals

#### Field Junction Box
- **Junction box (IJB1), Zone 1Exe IIC, T5, IP67**
- **Weidmuller Terminal block-59 Analog, 96 Digital**
- **Amphenol quick connectors for signal interface**
- **Steel Panel size: 760x500x205 mm**

#### Pressure Sensor
- **ATEX EX II 2G Ex D IIC T5**

#### ESD Push Button
- **Stahl, ESD Push button**

#### ESD Hydraulic Panel
- **Modification Kit for 102380417-ESD control panel**
- **Electronic Operated Hydraulic ESD control panel**

### Notes:
- Refer to the equipment databook for individual equipment specifications.
- Equipment is designed/certified to standards as applicable and documented on the individual Equipment Specification Data Sheets (ESDS).
- These ratings are guidelines only. Contact your local Halliburton SWT representative for more information.

For more information contact your local Halliburton representative or email us at welltesting@halliburton.com.