

Compact electrical emergency shutdown system



Fast, reliable well and process control while mitigating risks associated with well testing operation

Applications

- Onshore or offshore surface operations
- Immediate well flow control
- Complex operations

Improves wells via greater flexibility

- Flexibly configured modular system
- Full visibility of emergency sensors status from well testing data acquisition system and tablet displays
- Traceability and data recording
- Secure and remote monitoring via network components
- Small physical footprint
- Easy deployment

Features

- Three individual compact modules
- Safety-instrumented function with safety integrity level 2-rated programmable logic controller (PLC)
- Cause and effect matrix
- Up to 12 single sensors input
- Control of four hydraulic outputs
- Lightweight stackable modules
- Equipment that can be hand carried
- Remote monitoring through a PC or tablet
- Optical fiber for communication over long distances
- Ethernet communication for short distances
- Beacon and horn for visual and audible alarm in hazardous areas (Zone 1)
- Remote stations and dedicated high and low pilots
- Seamless integration with a well testing data acquisition system

Increases well control and reduces risks during well testing

An electrical emergency shutdown (EESD) system achieves fast and reliable well control, mitigating risks associated with well testing operations. The EESD secures the process in case of any emergency and is integrated with additional safety devices, reducing crew exposure to highly pressurized equipment.

The compact EESD-EA system is a streamlined, more compact version of the EESD-BAD system and comprises the following three modules:

- **Cabin module (EESDC)**—installed outside of the hazardous area. This module contains the PLC, bypass key selector, emergency stop button, reset button, and network components that enable the visualization of the EESD status on a PC or tablet.
- **Electrical module (EESDE)**—installed in a hazardous area (Zone 1). This junction box includes the input and output modules that interface with the various safety switches and hydraulic modules.
- **Hydraulic module (EESDH)**—deployed in a hazardous area (Zone 1). This system provides hydraulic power to the shutdown valves.

In addition to these three modules, the system comes with a variety of input and output devices, including EESD stations, process safety switches (pressure and temperature), stand-alone solenoid valves, extension cords, and T-pieces, that are selected following a risk assessment based on the process equipment and type of operation.

The system monitors all process switches and remote stations deployed at the wellsite. A shutdown is triggered if any process limit is reached or any station becomes activated. In the event of power or communication loss between modules and wells, the system will trigger a shutdown. The system also includes fault detection for each line and a data logger that features rapid and easy troubleshooting.

Like the EESD-BAD, the EESD-EA is fully compatible with the well testing data acquisition system.



EESD-EA model general view.

Compact electrical emergency shutdown system

EESD-EA Specifications

Model	EESD-EA
Height, ft [m]	1.9 [0.58] cabin module (EESDC) 3.9 [1.2] staked (EESDE and EESDH)
Dimensions, ft [m]	1.6 × 0.7 [0.48 × 0.21] cabin module (EESDC) 2.3 × 1.8 [0.7 × 0.56] staked (EESDE and EESDH)
Weight, lbm [kg]	31 [14] cabin module (EESDC) 148 [67] electrical module (EESDE) 119 [54] hydraulic module (EESDH) 267 [121] staked (EESDE and EESDH)
Power supply	100- to 230-V AC 50–60 Hz
Solenoid valve pressure rating	
Hydraulic circuit, psi [MPa]	3,000 [21]
Pneumatic circuit, psi [MPa]	145 [1]
Inputs	
EESD commands	12 lines
Outputs	
Hydraulic	4 lines
Hydraulic pump	Yes
Remote monitoring	Yes
Ethernet connection	Yes
DNV	No
Applicable codes	CE, NACE MR0175, SIL 2

All specifications are subject to change without notice.

EESD Models Comparison

Functions	EESD-BAD	EESD-EA (compact)
Electrical input	20	12 (single module)
Electrical output	4	4
Pneumatic output	1	1
PLC and relay location	In zone	In lab cabin
Remote display	✓	✓
Control panel	na	Digital
Optical fiber	✓	✓
WiFi	✓	✓
Status monitoring	✓	✓
Audible and visual alarms	✓	✓
Hand carry	na	✓
SIL 2	✓	✓
SIL 2 programming	✓	✓

All specifications are subject to change without notice.

slb.com/well-testing-control-equipment

