

WELL COMPLETIONS | INTELLIGENT COMPLETIONS

# Accu-Pulse™ incremental positioning module

Enhances reservoir management through control of produced or injected fluids

## FEATURES

- Enhanced reservoir management through control of produced or injected fluids
- Accurate flow estimation and allocation
- Avoidance of reservoir drawdown
- High level of well control for auto-gas lift, waterflood, dump flood, and commingled flow

## BENEFITS

- Hydraulic, incremental control system
- Ability to close a valve from any position in one pressure cycle
- Ability to incrementally move an ICV to discrete choke position

## Overview

The Accu-Pulse™ module enables incremental opening of a multi-position interval control valve (ICV) to control produced or injected fluid rates for enhanced reservoir management. The module works in tandem with either the Halliburton Digital Hydraulics™ system, Direct Hydraulics downhole control systems and/or with the HS-ICV multi-position valve.



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## How the Accu-Pulse™ module works

The Accu-Pulse control module provides incremental movement of a suitable ICV flow trim by exhausting a predetermined amount of control fluid from the ICV control piston. The capability to recharge and exhaust the same amount of fluid repeatedly allows the ICV flow trim to be accurately moved through up to 11 predetermined positions.

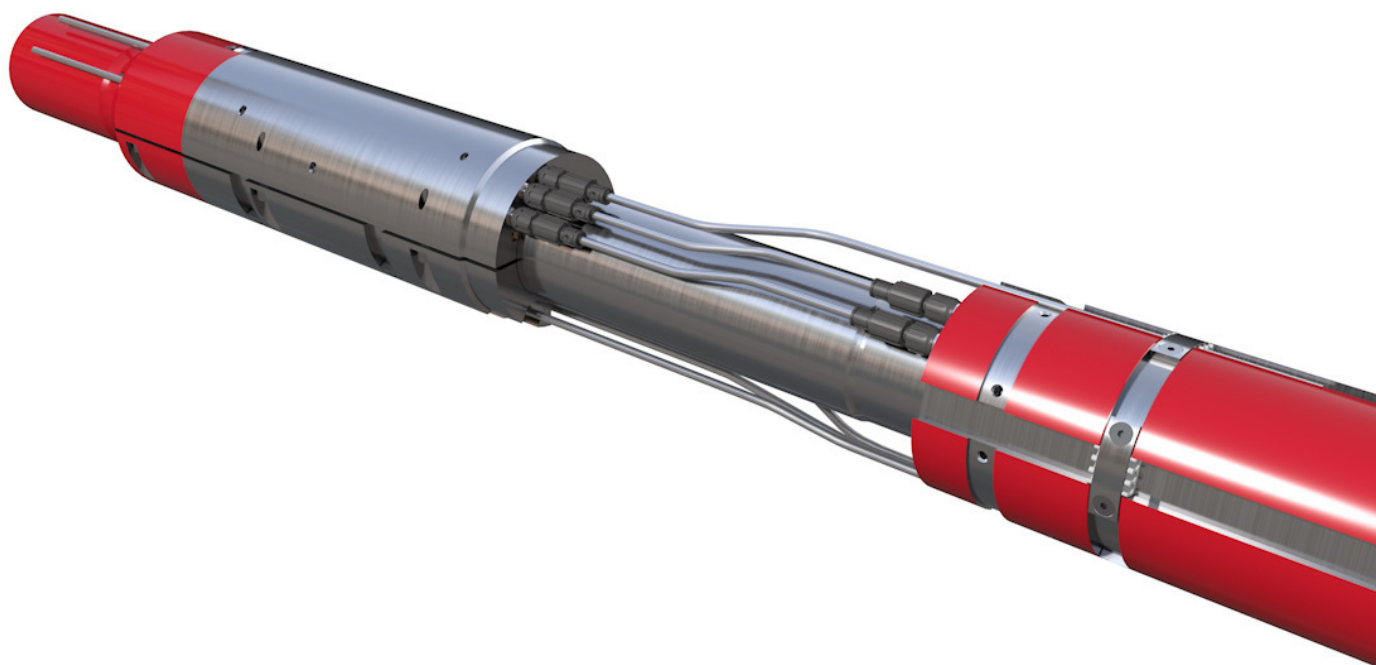
The Accu-Pulse control module can communicate with either side of the ICV piston, and drive the ICV open or closed. This ability provides incremental positioning in one direction, with the ICV being driven to a fully open or closed position when pressure is applied from the other direction.

## Reliability and integration testing

Extensive reliability and integration testing was performed on the Accu-Pulse™ control module to help ensure accuracy and long-term performance, under these conditions:

- High pressure, up to 15,000 psi
- High temperature, up to 330°F
- Flow-induced vibration, microhydraulic components

Long-term testing was also performed, including cycling it more than 2,500 times at elevated temperature and pressure while actuating an ICV. The module performed to specification repeatedly. The Accu-Pulse module was also subjected to extensive vibration testing, numerous high-pressure tests, and subsea systems integration testing to ensure the longevity of the system.



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