VE432
The ultimate response in digital vibrator control

- Auto-adaptive to changing ground conditions
- Reliable QC link and full data base integrity
- Enhanced multiple fleet management
- Expanded graphic interface for efficient quality assurance
- State-of-the-art hardware and software to preserve your investment
The VE432 is a new generation of Vibrator Digital Control System, using a fully auto-adaptive servomechanism. It enables the use of all advanced Vibroseis techniques such as:
- pseudo-random sweeps
- multiple simultaneous sources in flip-flop or slip-modes(*)
- coded sweeps
- cascaded (**) sweeps

The VE432 is fully compatible with most satellite DGPS and Glonass receivers, for integrated tracking of source positions.

**Digital Pilot Generator (DPG)**

The DPG is connected to the data acquisition system through an Ethernet link and acts as a master control unit for the VE432 system.

The DPG can be:
- either fully integrated with the SN388 acquisition system,
- or connected to any other type of acquisition system, using its own graphic user interface.

**Digital Servo Drive (DSD)**

Installed in each vibrator, the DSD performs real-time control of the vibrator ground force, computes and transmits complete attribute set for QC data base.

**VE432 Main features**

**Signal generation**

Up to 4 different simultaneous pilot signals are generated by the DPG. A pilot or a sweep signal is generated from an operator-defined library of 32 basic signals combined with up/down, phase shift parameters.

Basic signals are defined by their frequency range, frequency vs. time law, time duration, tapers and amplitude vs. time law.

A single DPG can handle up to 4 vibrator fleets with a total of 28 vibrators.

**Digital vibrator control**

By an automatic identification procedure, the VE432 digital model is adapted to any type of vibrator without the need for manual adjustment.

The fully digital auto-adaptive servomechanism performs an optimal control which minimizes the phase and distortion and maximizes the fundamental output.

Optimal digital control allows:
- fast sweep rate,
- combination of sweep segments with no dead time, used in cascaded (**) sweeps or multiple simultaneous source application,
- pseudo-random sweeps, for environmentally friendly vibration.

**Enhanced real-time Quality Control**

The DSD integrates a complete set of functions for automatic sensor tests. The check for coherence between all the measurements contributes to quality assurance, ensuring that the vibrator generates the proper sweep, without any risk of polarity inversion.

A complete QC data base is generated for real-time or post-processing analysis including:
- phase
- distortion
- fundamental ground force

(*) i.e. : slip-sweep invented by P.D.O.
(**) Exxon patent
In addition, the digital control identifies the ground viscosity and stiffness, which regularly provides information on the ground absorption model and can be used to enhance seismic data.

**Bar-graph QC display**
All the QC information is displayed within color bar-graphs with automatic threshold detection. For each vibrator, current values and average values over the last 50 vibrations are shown.

**Complete graphic display**
In addition to the QC data base information, the VE432 has the capability to graphically display in real time, the Phase, Distortion and Force results vs. Time or Frequency, for each vibrator.

**QC Statistics**
On request, statistics on QC data base can be performed, for daily or longer time period analysis, to detect any drift in vibrator performance or to be used as a preventive maintenance tool.

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**VE432 Specifications**

| **SIGNAL LENGTH** | **up to 64 s in 1-s steps** |
| **FREQUENCY VS. TIME LAW** | **linear, logarithmic, pseudo-random, user defined** |
| **FREQUENCY RANGE** | **1 to 250 Hz in 1-Hz steps** |
| **AMPLITUDE VS TIME LAW** | **linear interpolation** |
| **TAPERS** | **up to 1/2 signal length, Blackman Law** |
| **MAX. NUMBER OF VIBRATORS** | **28** |
| **“T₀ ACCURACY”** | **±50 µs at 99% per unit** |
| **CLOCK ACCURACY** | **1 ppm within temperature range and per year** |
| **QC DATA BASE FORMAT** | **Positioning data SPS file**  
**QC attributes APS file** |
| **PHYSICAL** | **Size : W x D x H DPG : 255 x 383 x 410 mm**  
**DSD : 280 x 443 x 422 mm**  
**Weight DPG : 10 kg**  
**DSD : 18 kg**  
**including mounting parts** |
| **TEMPERATURE RANGE** | **Operating 0°C to 45°C**  
**Storage -40°C to 70°C** |
| **POWER SUPPLY** | **DPG 110 V or 220 V / 40 W**  
**DSD 12 V / 100 W** |