

# AccelGuide MWD Kit

## Kit Advantages

- Easy to learn, operate, and assemble
- Low operating cost, minimal servicing required
- Advanced MWD system with additional options
- LWD ready system
- Rotary Steerable compatible
- Can withstand today's challenging drilling environments
- Modular design; Can design/build custom products or integrate existing OEM products
- Small form factor kit box (80" long)

## Tool String Features

- 175 C (350 F) maximum operating temperature
- Rugged design, built for extreme conditions
- AccelGuide PCB rail mount reduces stress on electronics
- AccelGuide proprietary snubber design; excellent shock and vibration dampening
- Rotary connectors for quick connections in the field
- Integrated rubber fin centralizers

## Kit Includes AccelGuide Module and Controller

- Low power (0.6W idle, 3.0W peak)
- Integrated memory with full data logging of sensors and events
- Modular design
- Inclination accuracy +/- 0.1
- Azimuth accuracy +/- 0.5 (at 90 degree inclination)
- Toolface accuracy +/- 1.0
- Total g field accuracy +/- 3.0 mg, total h field accuracy +/- 3.0 nT
- RPM measurement 2-200 RPM +/- 2% of value

## AccelGuide Pulsar

- Poppet driven by high efficiency BLDC motor
- Power supply minimizes motor impact on battery voltage
- Flow sensor vibration controlled and user configurable
- Integrated memory logging collects detailed view of all motor, communication, and environmental events downhole
- High tolerance to LCM

## AccelGuide Battery Modules

- Dual battery configuration with automatic switching
- Battery monitor with power usage, and shock/vibration logging



# AccelGuide MWD Kit



## Mudlink - The Decoder

- Automatically decodes mud pulses and displays to Rig Floor Display/safe area laptop
- Wireless communication to Rig Floor Display
- Intrinsically safe connection to certified Class 1/Division 1 pressure transducer
- Rugged design with visual indicators of pressure, decoding, and wireless status
- Multiple encoding schemes with advanced decoding capability

## Isys Rig Floor Display

- CE, ATEX Zone 2, NEMA 4x, IP65, Class 1/Division 2 certified
- Large 15" sunlight readable, anti-glare, glove compatible touch screen display
- Integrated heater allows operation from -40 C to 60 C (-40 F to 140 F)
- High environmental performance and reliability

# AGuide Gamma Logging

## Advantages

- Fully integrated MWD/LWD solution; no more configuring MWD and LWD system's to talk
- Designed for ease of use
- Accurate, rugged gamma module and advanced snubber design reduces shock and vibration to sensor module
- Tool memory logging. Logs can be imported into LogIT for high-resolution gamma logs at end of job
- AccelGuide Gamma/Remote Hub computer allows numerous client computers to connect simultaneously to same job including remote users

## AccelGuide Gamma/Remote Hub

- Rugged, fan-less design
- High power 802.11 b/g/n wireless hub
- 5 Network ports for wired access or cellular data access connection
- 4 RS-232/RS-485 ports for WITS input/output
- USB ports for external device connection

## Printrex Printer

- Prints continuous logs
- Rugged construction
- Thermal printing (no ink)

## LogIT MWD Laptop

- LogIT MWD software system
- Wireless connection to Rig Floor Display
- Easy to learn, setup, and use
- Programs tool string and decoder

## Additional Items

- Tool handling hardware (lifting slings, spacer bars, etc.)
- Tool interface box and programming cable
- 300' Yard cables for wireless backup (pressure transducer and network)
- Tools for field MWD service
- Accessories kit with different poppet/orifice sizes, o-rings, wear items, consumables, etc.
- Pipe screens



## Gamma Module

- Typical Sensitivity 1.4 CPS per API
- Thin-bed resolution 6.8" (in 8" hole diameter at 50% points)
- Accuracy +/- 2@300F, +/- 5% to 350F
- Low power. 8-11 mA at 28V
- Operating voltage range 17V - 36V
- Operating temperature -77F to 350F (-4C - 175C)
- Rugged. Vibration (3-axis) 5-1000 Hz random spectrum 20g RMS, Shock (Z-axis) 500g, (X or Y-axis) 1000g, 0.5 ms

## LogIT Software

- Single application for MWD, LWD, tool programming, printing, tool diagnostics, and log plotting
- WITS input and output via multiple RS-232/RS-485 ports, allows units of measure conversion plus pass-through of WITS messages
- Drag and drop gamma and ROP editing
- Export surveys and logs in LAS, CSV, Excel, and PDF
- Custom log header editor, builds log headers in your preferred format and easily modifies them
- Import LAS and CSV data for plotting alongside logged data
- Time-correlation editor for imported data to compensate for clock differences in logged data from multiple sources

# AccelGuide MWD Decoding System

## Advantages

- Designed for ease of use
- Real-time display of decoding data, status, and mud pulse graph; clear view of mud pulse shape and quality
- Wireless connection between doghouse and safe area computer (no more long cables to string across the job-site),
- Wired connection is available as backup
- Rugged, safe construction of all components; class 1/ division 2 rating on rig floor display, intrinsically safe connection of pressure transducer to decoder box
- Easy integration with external WITS systems, can receive and transmit WITS data
- Job history kept on tool programming, and job execution
- Full printing of survey and job reports to printer or directly to PDF (graphical plan and vertical section views can be printed as well)
- Can be upgraded to fully integrated MWD/LWD solution

## Pressure Transducer and Cable

- 10,000 psi NPT and Hammer Union style transducer included
- NPT transducer piston compensated for cold weather operations
- 80' cable for short distance between doghouse and standpipe connections
- 300' cable if Mudlink decoder situated in safe area



## Enhancements

- High speed decoding via AccelGuide proprietary pulse scheme (up to 4 bits/sec)
- Different telemetry sequences for rotating and sliding modes (switches between the two modes without cycling pumps)
- Downlink via pumps sequences, string rotation sequences or combination of both

# WINC (Survey on Connection)

## WINC Tool (unmanned survey tool)

- Length, 114" (approx. 9 feet) 9.5" collar
- Supplied in a pre-loaded short drill collar in sizes 4.75", 6.5", 8.0", 9.0", 9.5"
- Inclination accuracy, +/- .10 degrees up to 20 degrees
- Extreme LCM tolerance (500 lbs. direct drive force) flow through design
- Integrated rubber fin centralizer
- Operating temperature, 0 - 150C or 32 - 302F mud pulse tool
- Vibration random 20g RMS, 15 - 500Hz
- Shock 1000g, 0.5ms, half-sine
- Rated to 20,000 psi
- Operating battery life expectancy of 1,000 hours/40 days
- Smart closed loop technology, automatically adjusts pulse heights, for any flow rate, mud, or LCM
- Fail-open design

## Additional Advantages Include

- Reduce rig time, automatic surveys on connection
- Cost and time saving alternative to single shot surveys
- Less costly than full MWD
- Used and operated by rig personnel
- Provides fast and accurate wellbore inclination
- Simple, reliable and easy to use
- Minimizes non-drilling time, lessens chances of getting stuck, provides greater well control



## Wireless Tablet Display

- Doghouse certified when 100-240 VAC, 50 - 60Hz, Class 1, Division 2 battery powered
- 10.4 " rugged LED backlit display, sunlight reliable
- Wireless LAN
- Resistive touch screen standard
- High environmental performance and reliability
- Phone card and GPS allow tool to be tracked and monitored remotely

## Mudlink -- The Decoder

- Automatically decodes and displays to tablet: inclination, temperature, and battery voltage
- Two minute survey
- Wireless communications to tablet
- Printing of survey logs and graphical view

# AccelGuide Pulsar

## Electrical Specifications

**Operating voltage:** 15 – 28 VDC

**Connector:** 8-Conductor Rotary (Isys/GE Pilot) or Kintec (Tensor)

Flow sensor is vibration controlled and user-configurable  
Advanced power supply; minimizes motor impact on  
Battery voltage fluctuation and line noise to external tools

## Environmental Specifications

**Max operating pressure:** 20,000 PSI

**Max operating temp:** 177 C / 350 F (200 C in development)

**Vibration:** 20 gRMS (15 – 1000 Hz)

## Physical Specifications

**Pulse transmission:** Positive

**Outer Diameter (Housing):** 1.875 in.

**Length:** 44.1 in. – 46.5 in.

## Compatibility

**Tensor:** externally controlled pulse line, pulser controls flow switch

**BlueStar:** CAN Bus commands control pulsing, external flow switch

**Tool String:** supports advanced functions

**Other:** can be easily adapted to work with other

## Mechanical Features

- Rugged construction; designed for high vibration environment
- Reduced number of parts
- Self-adjusting poppet
- Self-aligning connectors; no more bent pins
- Twin start threads, modular design for quicker assembly
- Can be assembled with minimum set of tools
- Designed to minimize wash
- Piston compensated; tool only uses 5 cubic inches of oil and fills in less than 90 minutes
- Servo poppet, screen and office can be changed without removing oil

## Software Features

- Advanced fail-safe mode allows pulser to continue operating in the event of one or more motor hall sensors failing. Motor switches to hybrid sensed/sensor-less mode or to full sensor-less in the event of failure of all three hall sensors.
- Advanced memory logging stores information regarding all environmental conditions experienced, all communications received, and diagnostic information for each pulse executed by the motor.
- Advanced motor driver algorithm delivers only the power required to move pilot valve poppet at desired rate. Up to 50% power reduction under normal operating conditions. Quick response (< 200 us) to LCM blockage and pressure events allows motor to deliver up to 100% of rated power quickly when needed.
- Advanced motor driver starts motor in a way that minimizes impact on the battery by limiting battery current in a controlled manner.
- Easy to use Windows software and rugged USB interface box to configure, test and download/view logs.

