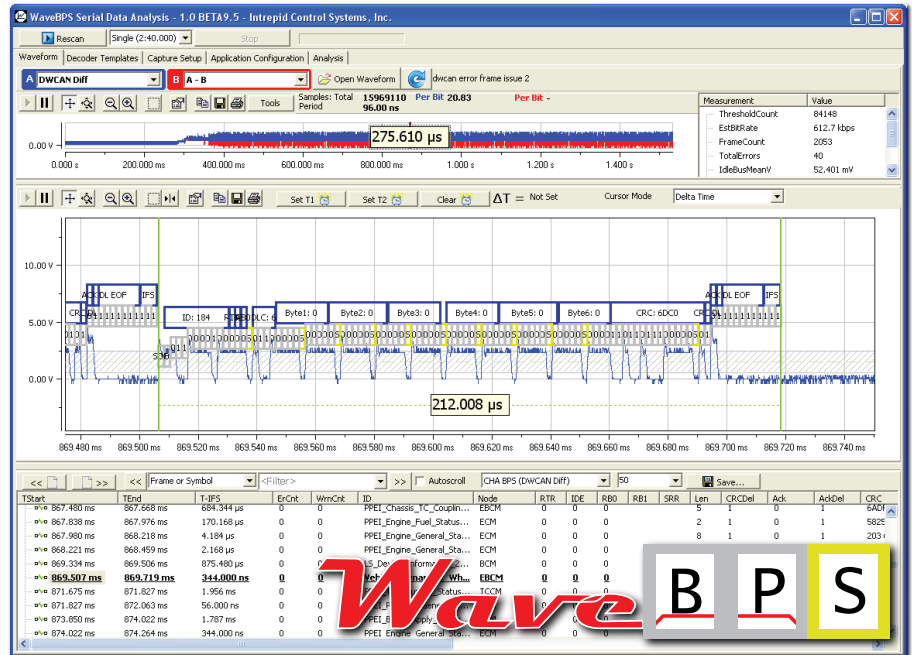


# WaveBPS

## Portable Low Level Analog Serial Data Analysis Software

In the real world, things often go wrong to the point where CAN bus, LIN bus, or FlexRay tools do not show enough information - one has to understand what is going on at a lower level.

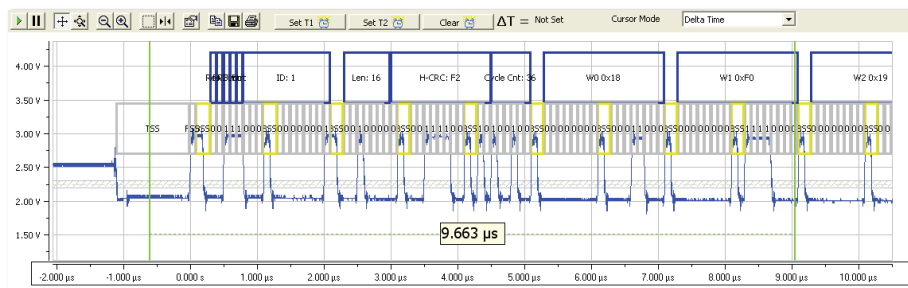
Intrepid Control Systems' WaveBPS is an advanced tool for capturing and analyzing serial data analog waveforms like FlexRay, CAN Bus, UART (J1708, K-Line, SCI, GM GCI), J1850, SPI, I2C, or LIN Bus. Besides general purpose monitoring, WaveBPS can quickly capture infrequent or intermittent protocol violations. For example, you can track down the CAN error frames that may occur during a crank event while another application verifies that there are no timing violations on software based LIN implementations.



WaveBPS decodes analog waveforms into CAN, LIN, FlexRay, and UART with powerful automatic measurements and error analysis.

### Benefits

- Move quickly and with less hassle by bringing your oscilloscope to the plant or vehicle
- Save time and improve quality with automatic measurements that quickly find nodes that are causing protocol errors
- Improve productivity by automating testing of your ECU's analog functions
- Build your knowledge by visualizing message timing interaction between ECUs
- Save time troubleshooting latencies of periodic messages
- Root cause intermittent events with microsecond accurate script based triggering
- Save time searching analog data captures for protocol violations
- Learn every little detail of a protocol in order to maximize efficiency



The PicoScope 3406D (above right) is a 128 Mega-sample depth 200MHz bandwidth USB oscilloscope with advanced triggering. FlexRay Decoding in WaveBPS (above left).

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**Intrepid Control Systems, Inc.**  
31601 Research Park Drive Madison Heights, MI 48071 USA  
(ph) +1-586-731-7950 (fax) +1-586-731-2274  
[www.intrepidcs.com](http://www.intrepidcs.com)

automotive engineering  
tool alliance  
[www.aeta-rice.com](http://www.aeta-rice.com)

# WaveBPS



## Missing the knob of a traditional scope?

WaveBPS supports the powerful 3Dconnexion SpaceNavigator six-axis analog knob.

### Specifications

- TCP/IP Server Text API allows remote control of application via Windows Clients and Vehicle Spy Function Blocks
- Open DLL import support allows importation of any waveform data from any source
- Export support for raw analog waveforms including efficient binary formats and CSV for either the entire waveform or a subset of waveform
- Export to Vehicle Spy buffer format
- Modification of waveform within software to create improper waveforms for error testing with Arbitrary Waveform Generators
- Import and Export WaveBPS XML configuration files
- Node Analysis can prepare statistical analysis of all network nodes for all decoders and automatic measurements
- Acquisition Modes include Single, Multiple, and Filter Match Capture. Filter Match capture is a multiple capture that stops when there is a filter match.
- Automatic buffer capture mode saves a raw buffer every time a filter condition is matched
- Automatic wave file playing on a filter match
- Cursor Modes allow measurement of : Delta Time in Seconds, Delta Time in Bits, Delta Volts, Absolute Volts, and Bus Utilization
- High Resolution Cursor allows very fine cursor control for measurements across large captures
- Auto scroll waveform based on bit rate or event with programmable rate
- Search, browse and filter based on any automatic measurement
- Powerful Mouse wheel based waveform navigation with optional knob
- Share encrypted waveforms with WaveBPS trial edition users

### Hardware Support

- Support of PicoScope 5000 series deep memory oscilloscopes: Programmable Capture and Depth, Oscilloscope probes, Triggering, CAN error frame trigger, external trigger modes, and pre-trigger.
- Support of neoVI FIRE and ValueCAN3 devices for advanced protocol triggering
- Support of Space Navigator 3D six axis knob

## Ordering Information:

Part Number	Description
WAVEBPS-PRO	PicoScope 3406B, WaveBPS software, Space Navigator Knob, neoVI FIRE, DLC Breakout, Vehicle Spy Software
WAVEBPS-BASE	PicoScope 3406B, WaveBPS software, Space Navigator Knob
WAVEBPS-SFT	WaveBPS Software license
WAVEBPS-MAIN	Maintenance 1 Year

### All Decoders

- All Automatic Measurements include the time at which they were taken. Clicking on the measurement will focus the zoom view on the measurement times.
- Automatic Measurements for every event: Time Start, Time Width, Inter frame Separation, Error Count, Warning Count, ID including message description, and Node Name
- Database support with import from Vehicle Spy software (UEF, DBC, LDF, FIBEX, etc.)
- User specified Baud Rate and thresholds including inversion
- Decoder Templates allow multiple customizations of each decoder with a custom description
- Supports Math Operations on multiple channels (A-B, A+B)

### CAN Decoder

- Automatic Measurement for every message: CAN Remote Transmit Request, CAN Identifier Extension Bit, CAN Reserved Bit Zero, CAN Reserved Bit One, Single Wire CAN High Voltage Message, Single Wire CAN High Voltage Ack Bit, Single Wire CAN High Speed Mode Bit Rate, CAN Substitute Remote Request, Length (DLC), CAN CRC Delimiter, CAN Ack Slot, CAN Ack Delimiter, CRC Checksum, CAN Stuff Bit Count, CAN Data Section, CAN Bitrate Tolerance, Minimum Frame Voltage, Maximum Frame Voltage, CAN Acknowledgment Bit Skew, CAN Acknowledgment Bit Width, Percentage of Time Used For Data
- Error & Warning Detection for every message: SRR = 0 Error, RB0 = 1 Error, DLC > 8 Error, Invalid CRC Error, CRC Del = 0 Form Error, Ack Error, ACK Del = 0 Form Error, EOF = 0 Form Error, IFS = 0 Form Error, RB1 = 1 Error, RB0 = 1 Error, Bit Tolerance Limit Error, High Voltage Ack Bit warning, Partial Frame Decode Warning, Error Frame
- Automatic Measurements for entire waveform : Frame Count, Error Count, Idle Bus Mean Voltage, Max Frame Voltage, Min Frame Voltage, Bus Utilization
- GMW3110 Single Wire CAN High-Speed mode transition decoding
- Single Wire CAN High Voltage Threshold setting
- User settable Bit tolerance and Sampling Point
- Satisfies bit tolerance measurements as indicated in GMW14241 - GMLAN Device Test Specification

### LIN Decoder

- Automatic Measurement for every message: LIN Sync Break In Bits, LIN Sync Waveform, LIN Slave Response Time, LIN Header Time, LIN Slave Message Time, LIN TMax Utilization, LIN Frame Length, LIN Check Sum, Data
- Error & Warning Detection for every message: TResponse Max Error, Message Length Error, TMax violation Error, Checksum Error, Slave Not Responding Error, Sync Error, THeader Max Error, ID Parity Error, Break Too Short, Break Too Long, Partial Frame Decode Warning
- Automatic Measurements for entire waveform: Frame Count, Error Count

### FlexRay Decoder

- Automatic Measurement for every message: FlexRay Reserved Bit, FlexRay Payload Preamble Indicator, FlexRay Null Frame Indicator, FlexRay Sync Frame Indicator, FlexRay Startup Frame Indicator, FlexRay Channel, FlexRay Header CRC, FlexRay Cycle Count, CRC, FlexRay Transmission Start Sequence Length, FlexRay Is Dynamic Frame, Data Length in words, Data Section
- Error & Warning Detection for every message: Header CRC Error, CRC Error, Partial Frame Decode Warning
- Automatic Measurements for entire waveform: Frame Count, Error Count
- Automatic A-B channel detection or fixed channel setting for decoder

See website for specifications on UART, J1850 VPW, I2C, and SPI Decoders

*\*Specifications subject to change. Please contact Intrepid for the latest information.*

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**Intrepid Control Systems, Inc.**

31601 Research Park Drive Madison Heights, MI 48071 USA

(ph) +1-586-731-7950 (fax) +1-586-731-2274

[www.intrepidcs.com](http://www.intrepidcs.com)

automotive engineering  
tool alliance  
[www.aeta-rice.com](http://www.aeta-rice.com)

