VSCOPE Binary Storage

# Main features

* Binary format, consists of fixed size blocks of 512 - 64k Bytes
* can contain mixed speed waves
* supports interleaved storage of same speed waves
* supports linear storage of a single wave
* supports native data formats with 8-bit granularity
  + byte sizes: 1-8
  + data types: unsigned, signed, float

# Blocks, Records

* block starts with 'VSBK' + u32 block length in 64-bit units (including this 8-Byte block header)
* A block consist of 64-bit aligned records
* every record starts with an u8 record identifier (an ascii letter), followed by a 24-bit size. The size defines the whole record length in 64-bit units, inclusive record header
* The second 32-bit of the record header is the ADDINFO. Its meaning dependent of the record type.
* Record types:
  + J: JSON scope configuration, must be the first record
  + S: statistics (min/max/avg) (optional)
  + F: data format specifier (must be followed by D-record)
  + D: data stream

# J-Record

* u8 = 'J'
* u24 = record size in 64-bit units
* u32 = JSON data length in bytes
* JSON data
* padding zeros up to 64-bit

The VALUES field is not present in the binary format files.

# F-Record

Describes the data storage format of the following D-Record.

* u8 = 'F'
* u24 = record size in 64-bit units
* u8: CHCNT = channel count
* u24: reserved
* CHCNT \* 2 Bytes: channel descriptor
  + u8: channel id: 0xC0 + channel number
    - Special value 0xFF = padding bytes
  + u8: data type
    - bit3-0: byte count, 0 = 16 bytes
    - bit5-4: type: 0 = unsigned, 1 = signed, 2 = float
* padding zeros up to 64-bit

# D-Record

Always follows an F-Record (which describes the data format)

* u8 = 'D'
* u24 = record size in 64-bit units
* u8: SWIDTH = sample width (in Bytes)
* u24: reserved (= 0)
* u32: SCNT = sample count
* i32: first sample serial
  + pretrigger is negative
  + the very first post trigger starts from 0
* u8[SCNT \* SWIDTH]: data samples without gaps
* at the end of pretrigger there might be one semi-filled block
* padding zeros up to 64-bit

# S-Record

Optional, when present it should be the first record in the block (before F and D records)

* u8 = 'S'
* u24 = record size in 64-bit units
* u8: CHCNT = channel count
* u8: statistical value format
  + bit3-0: VSIZE = byte count, 2 - 8 bytes
  + bit5-4: type: 0 = unsigned, 1 = signed, 2 = float
* u16: selected statistical values
  + bit0: sample count
  + bit1: average value
  + bit2: minimum value
  + bit3: maximum value
  + bit4-15: reserved
  + number of active stat bits = STATCNT
* CHCNT \* u8: channel list
  + u8: channel id: 0xC0 + channel number
* optional padding zeros up to 64-bit
* stat data: CHCNT \* STATCNT \* VSIZE Bytes
* Padding zeros up to 64-bit