# File Structure: FSCAV

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|  | **Address** | **DataType** | **Value** |
|  | 0 | Int32 | 9997 |
| 4 | Int32 | 2 (=4 for ‘old format’??) |
| 8 | Int32 | 708 |
| Δ #1 | 12 | Double64 | Triangle waveform (-0.4) #0 |
| Δ5,656 ┊ | ┊ | ┊ |
| 5,668 | Double64 | Triangle waveform (-0.4) #707 |
| Δ #2 | 5,676 | Double64 | 0.000 |
| Δ5,656 ┊ | ┊ | ┊ 0.000 |
| 11,332 | Double64 | 0 |
| Waveform Section | +0 11,340 | Int32 | 2 |
| 11,344 | Int32 | 708 |
| 11,348 | Int32 | 708 |
| 11,352 | Int32 | 2 |
| 11,356 | Double64 | 249882 Update Rate (Hz) #1 |
| 11,364 | Double64 | NAN Update Rate (Hz) #2 |
| 11,372 | Int32 | 2 |
| +36 11,376 | Double64 | 2.8333 Triangle Waveform Duration (ms) #1 |
| 11,384 | Double64 | 2.8333 Triangle Waveform Duration (ms) #2 |
| 11,392 | Int32 | 2 Number of AO channels |
| +56 11,396 | Double64 | 1200 Scan Rate (V/s) #1 |
| 11,404 | Double64 | 0 Scan Rate (V/s) #2 |
| 11,412 | Int32 | 2 Number of AO channels |
| 11,416 | Double64 | 5 Multiplier #1 |
| 11,424 | Double64 | 5 Multiplier #2 |
| 11,432 | Int32 | 2 Number of AO channels |
| 11,436 | Double64 | 0 Offset #1 |
| 11,444 | Double64 | 0 Offset #2 |
| 11,452 | Double64 | 100 Waveform Frequency (Hz) |
| 11,460 | Double64 | ?? |
| 11,464 | Int32 | 4 |
| 11,468 | Int32 | 0 |
| Stimulation Section | 11,472 | Int32 | 60 Stimulation Frequency (Hz) |
| 11,476 | Int32 | 40 Stimulation Pulses |
| 11,480 | Double64 | 2 Stimulation Pulse Width (ms) |
| 11,488 | Double64 | 3 Stimulation Amplitude (V) |
| 11,496 | Int16 | Table Stimulation Polarity |
| 11,498 | Double64 | 89.5 Stimulus to Scan Delay (ms) |
| 11,506 | Int32 | 50000 Stimulation Update Rate (Hz) |
| 11,510 | Double64 | 1 Multiplier |
| Collection Info Section | 11,518 | Int32 | 0 ???? (not Stim or TTL) |
| +182 11,522 | Int32 | 200 Pre Event Scans |
| +186 11,526 | Int32 | 1800 Post Event Scans |
| +190 11,530 | Int32 | 1 Number Channels |
| 11,534 | Int32 | 1 Number Channels (same as 11,530) |
| 11,538 | Int32 | 1 Stim or TTL ??? |
| +202 11,542 | Int16 | Table Active Input Channel |
| 11,544 | Int32 | 2111 Interesting value / padding ??? |
| +208 11,548 | UInt16 | Table nA/V Channel #0 |
| ┊ | ┊ | ┊ 8 byte block per channel |
| 11,604 | UInt16 | Table nA/V Channel #7 |
| +270 11,610 | Int32 | Table Event Mode |
| 11,614 | Int32 | 256000 Some dividing factor ???? |
| +282 11,622 | UInt16 | \*\*\* nA/V |
| Δ28┊ | ┊ | ┊ 4 byte block per channel |
| 11,648 | UInt16 | \*\*\* |
|  | 11,650 | Int16 | ??????? Padding |
|  | 11,652 | Int32 | 0 |
|  | Δ988,344┊ | ┊ | ┊ |
|  | 999,996 | Int32 | 0 |
|  | 1,000,000 | Int16 | Data This is the main data array |
|  | Δ2,832,000┊ | ┊ | ┊ |
|  | 3,832,000 | Int16 | EOF |

### Lookup Tables

|  |  |
| --- | --- |
| **Value @ 11,612** | **Event Mode (Int32)** |
| 768 | 3: No Event |
| 512 | 2: Stim (Ext) |
| 256 | 1: Stim (Int) Note: Stimulation Update Rate also changes (5,000 > 50,000) |
| 0 | 0: Event Trigger |

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| **Value @ 11,494** | **Stimulation Polarity (Int16)** |
| 0 | Biphasic |
| 1 | Monophasic (+ve) |
| 2 | Monophasic (-ve) |
| 3 | Sine |

|  |  |
| --- | --- |
| **Value @ 11,542** | **Active Channel # (Int16)** |
| 12288 | 0 |
| 12544 | 1 |
| 12800 | 2 |
| ┊ | ┊ |
| 14080 | 7 |
| Multiples of 256 | |

|  |  |  |
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| **Value @ Channel Block 1** | **Value @ Channel Block 2** | **nA/V (Int16)**  **[A/D Gain = 1]** |
| -24768 40768 | -14336 51200 | 100 |
| -20672 44864 | 18432 18432 | 200 |
| -15480 50056 | -1536 64000 | 500 |

|  |  |  |
| --- | --- | --- |
| **Value @ Channel Block 1** | **Value @ Channel Block 2** | **nA/V (Int16)**  **[A/D Gain = 2]** |
| -28864 36672 | -14336 51200 | 100 |
| -24768 40768 | 18432 18432 | 200 |
| -19576 45960 | -1536 64000 | 500 |

|  |  |  |
| --- | --- | --- |
| **Value @ Channel Block 1** | **Value @ Channel Block 2** | **nA/V (Int16)**  **[A/D Gain = 10]** |
| 26880 26880 | -14336 51200 | 100 |
| 30976 30976 | 18432 18432 | 200 |
| -28864 36672 | -1536 64000 | 500 |

|  |  |  |  |
| --- | --- | --- | --- |
| **nA/V** | **Value @ Channel Block 1** | | |
| **A/D Gain 1** | **A/D Gain 2** | **A/D Gain 10** |
| 100 | -24768 40768 | -28864 36672 | 26880 26880 |
| 200 | -20672 44864 | -24768 40768 | 30976 30976 |
| 500 | -15480 50056 | -19576 45960 | -28864 36672 |

### Notes

* ‘Time in Waveform’ is not saved in the file
* ‘Event Trigger Polarity’ does not seem to be saved in the file
* Block 2 of scaling information only changes with ‘nA/V’ (not ‘A/D gain’)

### Scaling Raw Data to Decimal (Float32)

### Data Chunk Calculations

Total file size: 3,832,000 (size) or 3,866,624 (size on disk)

20 sec recording @ 100 Hz

2 sec control, 10 sec pause, 8 sec ‘useful data’

2000 sweeps (voltamograms)

708 samples per sweep (voltamogram)

Assuming data acquired for total recording duration (20 sec)

Total samples: 2000 \* 708 = 1,416,000

Total bytes (assume Double64): 1,416,000 \* 8 = 11,328,000

Total bytes (assume Single32): 1,416,000 \* 4 = 5,664,000

**Total bytes (assume Int16): 1,416,000 \* 2 = 2,832,000**