Comparison of EPL Hi-freq meas system and SyncAv

Both the Hi-freq meas system (HFMS) and SyncAv are successors to SysID, written by Jont Allen and Sunil Puria.

Hi-freq meas system was written at EPL by John Rosowski and Mike Ravicz. Part of its design philosophy was to make different choices and overcome unliked features of SysID. It has greater flexibility and greater in-experiment plotting capabilities than SyncAV.

SyncAv was written at Stanford by Sunil Puria and Kevin O’Connor. It is based on SysID. It has more sophisticated stimulus weighting and calibration capabilities than HFMS. It is integrated with the SyncAV Toolbox for analysis, management, and plotting of large datasets.

Both programs save data files in ASCII that can be read into Matlab.

Both programs are currently installed on the Ch. 6 PXI for comparison.

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| --- | --- | --- |
| Attribute | HFMS | SyncAV |
| Owner of intellectual property | EPL | EPL? Other? |
| Software maintenance | Mike Ravicz | Kevin O’Connor |
|  |  |  |
| Platforms | PC, PXI, USB | PC, PXI, USB |
| Hardware | 16- or 24-bit board, USB box | 24-bit board, USB box, 16-bit board? |
| Current users | Ch. 6, Ch. 10, Shop | Ch. 3, Ch. 6 |
|  |  |  |
| Outputs | 1 chan | 2 chan(?) |
| Puts out sync pulse | Per epoch (in progress) | Yes per sample;  No? per epoch  (can use clicks?) |
| Inputs | 1-4 | 1-6 |
| Can use external trigger | Yes | ? |
|  |  |  |
| Save & load equipment config. settings | Yes | No |
| Save & load stimulus settings | Yes | No |
| Stimulus types | None  Tone  Sine sequence (can be weighted)  Click  Linear chirp (can apply simple equalization)  Log chirp  Harmonic complex (weighting in progress) | Tone  Sine sequence (can be weighted)  Click  Linear chirp (can be weighted) |
| Sine sequence parameters | Log freq. spacing, specify pts/octave | Log or linear freq. spacing, specify freqs. |
|  |  |  |
| Frequency range | 1 Hz – 100 kHz | 1 Hz? – 100? kHz |
| Measurement parameter flexibility | higher |  |
| Max sample rate | 500 kHz (Ch. 6) or limited by board | 200 kHz or limited by board |
|  |  |  |
| Stimulus weighting – equalization | Simple for sine sequence | Sophisticated for sine sequence and chirps |
| Calibration | Simple | More sophisticated |
|  |  |  |
| Data file structure | Text w/ header | Text w/ header |
| Readable by Matlab? | Yes | Yes |
| Save measurement (spectrum) file | Automatic | Manual |
| Filename indexing | Yes | No |
| Sine sequence features | Save all intermediate measurements | Track 2nd & 3rd harmonic, estimate noise floor |
| Save waveform data | Manual | Automatic if spectrum saved |
| Plot several measurements simultaneously | Spectra: Yes; waveforms: in separate program | Spectra: in separate program; waveforms: No |
| Plottable file types | HFMS, SyncAv, spectrum analyzer | SyncAv, others? |
|  |  |  |
| Program structure | Old, simple | More current, more complicated |
| Run executables rather than source code | Yes | Yes |
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