

APPENDIX B. DATA FILE STRUCTURES

B.1. GENERAL STRUCTURE OF THE SVAN 94x FILE

Each file containing data from the SVAN 94x instrument consists of several groups of words. In the case of the **SVAN 945** there are five different types of files that contain:

- the measurement results from the **Sound Level Meter** mode (cf. App. B.2);
- the results from **1/1 OCTAVE** analysis (cf. App. B.3);
- the results from **1/3 OCTAVE** analysis (cf. App. B.4);
- the results of the tonality function analysis (cf. App. B.5);
- the results stored in the file in the instrument's buffer (cf. App. B.6).

Each file has the following elements:

- a file header (cf. Tab. B.1.1);
- the unit and internal software specification (cf. Tab. B.1.2);
- the user's text (a header) stored together with the measurement data (cf. Tab. B.1.3);
- the parameters and global settings, common for all profiles (cf. Tab. B.1.4);
- special settings for profiles (cf. Tab. B.1.5);
- the marker for the end of the file (cf. Tab. B.1.18).

The other elements of the file structure are not obligatory for each file type stated above. They depend on the file type (**SLM**, **1/1 OCTAVE** or **1/3 OCTAVE** analysis, file from the buffer) and on the setting of the **SAVE STAT.** option in the **SAVE OPTIONS** sub-list from the **FILE** list. These elements are as follows:

- the main results (cf. Tab. B.1.6);
- the results coming from **1/1 OCTAVE** analysis (cf. Tab. B.1.7);
- the results coming from **1/3 OCTAVE** analysis (cf. Tab. B.1.8);
- the header of the FFT analysis in the whole band (cf. Tab. B.1.9);
- the results of the FFT analysis in the whole band (cf. Tab. B.1.11);
- the header of the FFT analysis in the selected band (cf. Tab. B.1.10);
- the results of the FFT analysis in the selected band (cf. Tab. B.1.11);
- the statistics header (cf. Tab. B.1.12);
- the results of statistical analysis (cf. Tab. B.1.13);
- the statistics header in 1/1 OCTAVE or 1/3 OCTAVE analysis (cf. Tab. B.1.14);
- the statistics results in 1/1 OCTAVE or 1/3 OCTAVE analysis (cf. Tab. B.1.15);
- the buffer header (cf. Tab. B.1.16);
- the data stored during the measurements in the buffer (cf. Tab. B.1.17).

Below, all file structure groups are described separately in Tab. B.1.1 – Tab. B.1.18. The format used in the columns, named **Comment** with the square parenthesis ([xx, yy]), means the contents of the word with **xx** is the most significant byte (MSB) and **yy** the lowest significant byte (LSB) of the word. The format 0xnnnn means that the nnnn is four-digit number in hexadecimal form.

Table B.1.1. FILE HEADER

Word number	Name	Comment
0	0x0C01	[01, 08=header_length (12 words)]
1..4	FileName	name of the file or buffer (8 characters)
5	reserved	reserved
6	CurrentDate	file creation date
7	CurrentTime	file creation time
8..11	AssBufFileName	name of the associated buffer or file (8 bytes)

Table B.1.2. UNIT AND SOFTWARE SPECIFICATION

Word number	Name	Comment
0	0x0602	[02, 06=specification_length]
1	UnitNumber	unit number
2	UnitType	945
3	SoftwareVersion	software version
4	SoftwareIssueDate	software issue date
5	DeviceMode	mode of the instrument

Table B.1.3. USER'S TEXT

Word number	Name	Comment
0	0xnn03	[03, nn=specification_length]
1...	title text	the user's text (two characters in a word) finished with one or two null bytes

Table B.1.4. PARAMETERS AND GLOBAL SETTINGS

Word number	Name	Comment
0	0x1704	[04, 17=block_length (23 words)]
1	MeasureStartDate	measure start date
2	MeasureStartTime	measure start time
3	DeviceFunction	1 - SOUND LEVEL METER , 2 - 1/1 OCTAVE analyser, 3 - 1/3 OCTAVE analyser
4	MeasureInput	Input
5	Range	1 - 95 dB , 2 - 110 dB , 3 - 125 dB
6	UnitFlags	calibration flags
7	AutoRepeat	auto repeat flag
8	NofProf	number of profiles
9	StartDelay	start delay time
10..11	IntTimeSec	integration time specified in seconds
12	reserved	reserved
13	reserved	reserved
14	reserved	reserved
15	reserved	reserved
16	TriggerOn	triggering: 0 - switched off, 1 - switched on
17	TriggerLev	level of triggering: 24..136 dB
18	TriggerMode	trig. mode: 0 - SLOPE'+ , 1 - SLOPE'- , 2 - LEVEL'+ , 3 - LEVEL'-
19	MicPolar	polarisation of the microphone: 0 - 0 V , 1 - 200 V
20	LeqInt	detector type in the LEQ function: 0 - LINEAR , 1 - EXPONENT .
21	SpectrumFilter	filter in 1/1 or 1/3 OCTAVE analysis: 0 - HP , 1 - LIN , 2 - A , 3 - C
22	SpectrumBuff	1/1 or 1/3 OCTAVE buffering (DeviceFunction = 2 or 3): 0-on, 1-off

Table B.1.5. SPECIAL SETTINGS FOR PROFILES

Word number	Name	Comment
0	0x1405	[05, 14=block_length (20 words)]
1	0x0307	[used_profile, profile_mask]
2	0x0606	[06, 06=subblock_length]

3	DetectorP[1]	detector type in the first profile: 0 - 100 ms , 1 - 125 ms , 2 - 200 ms , 3 - 500 ms , 4 - 1 s , 5 - 2 s , 6 - 5 s , 7 - 10 s
4	FilterP[1]	filter type in the first profile: 1 - Lin , 2 - A , 3 - C , 4 - G
5	BufferP[1]	buffer contents definition in the first profile: 0 - none, 1 - PEAK , 2 - MAX , 3 - MIN , 4 - RMS ,
6	CalibrFactor[1]	calibration factor (*10 dB) in the first profile
7	ProfileFlags[1]	flags in the first profile
8	0x0606	[06, 06=subblock_length]
9	DetectorP[2]	detector type in the second profile: 0 - 100 ms , 1 - 125 ms , 2 - 200 ms , 3 - 500 ms , 4 - 1 s , 5 - 2 s , 6 - 5 s , 7 - 10 s
10	FilterP[2]	filter type in the second profile: 1 - Lin , 2 - A , 3 - C , 4 - G
11	BufferP[2]	buffer contents definition in the second profile: 0 - none, 1 - PEAK , 2 - MAX , 3 - MIN , 4 - RMS ,
12	CalibrFactor[2]	calibration factor (*10 dB) in the second profile
13	ProfileFlags[2]	flags in the second profile
14	0x0606	[06, 06=subblock_length]
15	DetectorP[3]	detector type in the third profile: 0 - 100 ms , 1 - 125 ms , 2 - 200 ms , 3 - 500 ms , 4 - 1 s , 5 - 2 s , 6 - 5 s , 7 - 10 s
16	FilterP[3]	filter type in the third profile: 1 - Lin , 2 - A , 3 - C , 4 - G
17	BufferP[3]	buffer contents definition in the third profile: 0 - none, 1 - PEAK , 2 - MAX , 3 - MIN , 4 - RMS ,
18	CalibrFactor[3]	calibration factor (*10 dB) in the third profile
19	ProfileFlags[3]	flags in the third profile

Table B.1.6. MAIN RESULTS

Word number	Name	Comment
0	0x2C07	[07, 2C=block_length (44 words)]
1	0x0307	[used_profile, profile_mask]
2	0x0E08	[08, 0E=subblock_length (14 words)]
3..4	MeasureTime	time of the measurement in the first profile
5	Result[1][1]	PEAK value in the first profile
6	Result[1][2]	maximal value (MAX) in the first profile
7	Result[1][3]	minimal value (MIN) in the first profile
8	Result[1][4]	SPL value in the first profile
9	Result[1][5]	LEQ value in the first profile
10	Result[1][6]	SEL value in the first profile
11	Result[1][7]	Lex8 value in the first profile
12	Result[1][8]	Ltm3 value in the first profile
13	Result[1][9]	Ltm5 value in the first profile
14	Result[1][10]	N value for the LN statistics
15	Result[1][11]	value of the LN statistics
16	0x0E08	[08, 0E=subblock_length (14 words)]
17..18	MeasureTime	time of the measurement in the second profile
19	Result[2][1]	PEAK value in the second profile
20	Result[2][2]	maximal value (MAX) in the second profile
21	Result[2][3]	minimal value (MIN) in the second profile
22	Result[2][4]	SPL value in the second profile
23	Result[2][5]	LEQ value in the second profile
24	Result[2][6]	SEL value in the second profile
25	Result[2][7]	Lex8 value in the second profile
26	Result[2][8]	Ltm3 value in the second profile

27	Result[2][9]	Ltm5 value in the second profile
28	Result[2][10]	N value for the LN statistics
29	Result[2][11]	value of the LN statistics
30	0x0E08	[08, 0E=subblock_length (14 words)]
31..32	MeasureTime	time of the measurement in the third profile
33	Result[3][1]	PEAK value in the third profile
34	Result[3][2]	maximal value (MAX) in the third profile
35	Result[3][3]	minimal value (MIN) in the third profile
36	Result[3][4]	SPL value in the third profile
37	Result[3][5]	LEQ value in the third profile
38	Result[3][6]	SEL value in the third profile
39	Result[3][7]	Lex8 value in the third profile
40	Result[3][8]	Ltm3 value in the third profile
41	Result[3][9]	Ltm5 value in the third profile
42	Result[3][10]	N value for the LN statistics
43	Result[3][11]	value of the LN statistics

Table B.1.7. 1/1 OCTAVE ANALYSIS RESULTS

Word number	Name	Comment
0	0xnn0E	[0E, nn=block_length = 0x15 (21 words)]
1	0x0101	[used_profile, profile_mask]
2	LowestFreq	the lowest 1/1 OCTAVE frequency (*100 Hz) = 100
3	NOct	number of 1/1 OCTAVE values = 15
4	NOctTot	number of TOTAL values = 3
5...	Octave[i]	1/1 octave[i] value (*10 dB); i = 1..Noct+NoctTot (1..18)

Table B.1.8. 1/3 OCTAVE ANALYSIS RESULTS

Word number	Name	Comment
0	0xnn10	[10, nn=block_length]
1	0x0101	[used_profile, profile_mask]
2	LowestFreq	the lowest 1/3 OCTAVE frequency (*100 Hz) = 80
3	Ntter	number of 1/3 OCTAVE values = 45
4	NterTot	number of TOTAL values = 3
5...	Tercje[i]	1/3 octave[i] value (*10 dB); i = ..Nter+NterTot (1..48)

Table B.1.9. HEADER OF THE FFT IN THE WHOLE BAND

Word number	Name	Comment
0	0x0A15	[15, 0A= block_length (10 words)]
1	reserved	reserved
2	LowestFreqNo	number of the first line in the FFT spectrum = 0
3	Nfft	number of lines in the spectrum = 1600
4	NfftTot	number of TOTAL lines in the spectrum = 0
5	FftBand	band of the FFT analysis: 1 - 24 kHz
6	FftWindow	window in the FFT analysis: 1 - HANNING , 1 - RECTANGLE , 2 - FLAT TOP , 3 - KAISER-BESSEL
7	FftAverag	type of averaging in the FFT analysis: 0 - LINEAR , 1 - EXPONENTIAL
8..9	FftSampFreq	sampling frequency

Table B.1.10. HEADER OF THE FFT IN THE SELECTED BAND

Word number	Name	Comment
0	0x0A15	[15, 0A= block_length (10 words)]
1	reserved	reserved
2	LowestFreqNo	number of the first line in the FFT spectrum = 0
3	Nfft	number of lines in the spectrum = 1600
4	NfftTot	number of TOTAL lines in the spectrum = 0
5	FftBand	band of the FFT analysis: 1 - 3 kHz
6	FftWindow	window in the FFT analysis: 1 - HANNING , 1 - RECTANGLE , 2 - FLAT TOP , 3 - KAISER-BESSEL
7	FftAverag	type of averaging in the FFT analysis: 0 - LINEAR , 1 - EXPONENTIAL
8..9	FftSampFreq	sampling frequency

Table B.1.11. FFT ANALYSIS RESULTS

Word number	Name	Comment
0	0x0012	[12, 0 (block is longer than 255 words, the length is given in the second word)]
1	FftBlockLength	$2 + Nfft + NfftTot = 2 + 1600 + 0 = 1602$
2..	FFT[i]	value of the FFT line (*10 dB); i = 1..1600

Table B.1.12. STATISTICS HEADER (the presence depends on the SAVE STAT. position)

Word number	Name	Comment
0	0x0E09	[09, 0E=block_length (14 words)]
1	0x0703	[03=number of profiles, 07=active profiles mask]
2	0x040A	[0A, 04=subblock_length]
3	NofClasses[1]	number of classes in the first profile
4	BottomClass[1]	bottom class boundary (*10 dB) in the first profile
5	ClassWidth[1]	class width (*10 dB) in the first profile
6	0x040A	[0A, 04=subblock_length]
7	NofClasses[2]	number of classes in the second profile
8	BottomClass[2]	bottom class boundary (*10 dB) in the second profile
9	ClassWidth[2]	class width (*10 dB) in the second profile
10	0x040A	[0A, 04=subblock_length]
11	NofClasses[3]	number of classes in the third profile
12	BottomClass[3]	bottom class boundary (*10 dB) in the third profile
13	ClassWidth[3]	class width (*10 dB) in the third profile

Table B.1.13. STATISTICS (the presence depends on the SAVE STAT. position)

Word number	Name	Comment
0	0x010B	[0B, prof_mask#1]
1	SubblockLength	$2 * \text{number of classes in the first profile} + 2$
2..3	Histogram[1][1]	the first counter in the first profile
4..5	Histogram[1][2]	the second counter in the first profile

.....
0	0x020B	[0B, prof_mask#2]
1	SubblockLength	2 * number of classes in the second profile + 2
2..3	Histogram[2][1]	the first counter in the second profile
4..5	Histogram[2][2]	the second counter in the second profile
.....
0	0x040B	[0B, prof_mask#3]
1	SubblockLength	2 * number of classes in the third profile + 2
2..3	Histogram[3][1]	the first counter in the third profile
4..5	Histogram[3][2]	the second counter in the third profile
.....

Table B.1.14. STATISTICS HEADER IN 1/1 OCTAVE OR 1/3 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position)

Word number	Name	Comment
0	0x0513	[13, 05=block length (5 words)]
1	NofHist	number of histogramms (number of 1/1 octaves or 1/3 octaves)
2	NofClasses	number of classes in the histogramm
3	BottomClass	bottom class boundary (*10 dB)
4	ClassWidth	class width (*10 dB)

Table B.1.15. STATISTICS IN 1/1 OCTAVE OR 1/3 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position)

Word number	Name	Comment
0	0x0114	[14, 01= number of the histogramm (1/1 octave or 1/3 octave)]
1	SubblockLength	2 * NofClasses + 2
2..3	Histogram[1][1]	first counter for the first 1/1 octave or 1/3 octave
4..5	Histogram[1][2]	second counter for the first 1/1 octave or 1/3 octave
.....
0	0x0214	[14, 02 = number of the histogramm (1/1 octave or 1/3 octave)]
1	SubblockLength	2 * NofClasses + 2
2..3	Histogram[2][1]	first counter for the second 1/1 octave or 1/3 octave
4..5	Histogram[2][2]	second counter for the second 1/1 octave or 1/3 octave
.....
.....
0	0xnn14	[14, nn = NofHist = number of the last histogramm (1/1 octave or 1/3 octave)]
1	SubblockLength	2 * NofClasses + 2
2..3	Histogram[nn][1]	first counter for the last 1/1 octave or 1/3 octave
4..5	Histogram[nn][2]	second counter for the last 1/1 octave or 1/3 octave
.....

Table B.1.16. HEADER OF THE FILE FROM THE BUFFER

Word number	Name	Comment
0	0x080F	[0F, 08=header_length]
1	BuffTSec	buffer time step - full seconds part
2	BuffTMiliseC	buffer time step - milliseconds part
3	LowestFreq	the lowest 1/1 OCTAVE or 1/3 OCTAVE frequency (*100 Hz) (equal to 100 or equal to 80)
4	NOctTer	number of 1/1 OCTAVE or 1/3 OCTAVE results (15 or 45)
5	NOctTerTot	number of TOTAL values = 3
6..7	BuffLength	buffer length (bytes)



Note: The current buffer time step in seconds can be obtained from the formulae:
 $T = \text{BuffTSec} + \text{BuffTMiliseC} / 1000$

Table B.1.17. CONTENTS OF THE FILE FROM THE BUFFER

Word number	Name	Comment
0..(BuffLength/2-1)		result#1, result#2, ... result#(BuffLength/2-1)

Table B.1.18. FILE END MARKER

Word number	Name	Comment
0	0xFFFF	file end marker

B.2. STRUCTURE OF THE FILE WITH THE RESULTS FROM THE SLM MODE

FILE HEADER - cf. Tab. B.1.1.

UNIT AND SOFTWARE SPECIFICATION - cf. Tab. B.1.2.

USER'S TEXT - cf. Tab. B.1.3.

PARAMETERS AND GLOBAL SETTINGS - cf. Tab. B.1.4.

SPECIAL SETTINGS FOR PROFILES - cf. Tab. B.1.5.

MAIN RESULTS - cf. Tab. B.1.6.

STATISTICS HEADER (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.12.

STATISTICS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.13.

FILE END MARKER - cf. Tab. B.1.18.

B.3. STRUCTURE OF THE FILE WITH 1/1 OCTAVE ANALYSIS RESULTS

FILE HEADER - cf. Tab. B.1.1.

UNIT AND SOFTWARE SPECIFICATION - cf. Tab. B.1.2.

USER'S TEXT - cf. Tab. B.1.3.

PARAMETERS AND GLOBAL SETTINGS - cf. Tab. B.1.4.

SPECIAL SETTINGS FOR PROFILES - cf. Tab. B.1.5.

MAIN RESULTS - cf. Tab. B.1.6.

1/1 OCTAVE ANALYSIS RESULTS - cf. Tab. B.1.7.

STATISTICS HEADER (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.12.

STATISTICS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.13.

STATISTICS HEADER IN 1/1 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.14.

STATISTICS IN 1/1 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.15.

FILE END MARKER - cf. Tab. B.1.18.

B.4. STRUCTURE OF THE FILE WITH 1/3 OCTAVE ANALYSIS RESULTS

FILE HEADER - cf. Tab. B.1.1.

UNIT AND SOFTWARE SPECIFICATION - cf. Tab. B.1.2.

USER'S TEXT - cf. Tab. B.1.3.

PARAMETERS AND GLOBAL SETTINGS - cf. Tab. B.1.4.

SPECIAL SETTINGS FOR PROFILES - cf. Tab. B.1.5.

MAIN RESULTS - cf. Tab. B.1.5.

1/3 OCTAVE ANALYSIS RESULTS - cf. Tab. B.1.5.

STATISTICS HEADER (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.12.

STATISTICS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.13.

STATISTICS HEADER IN 1/3 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.14.

STATISTICS IN 1/3 OCTAVE ANALYSIS (the presence depends on the SAVE STAT. position) - cf. Tab. B.1.15.

FILE END MARKER - cf. Tab. B.1.18.

B.5. STRUCTURE OF THE FILE WITH THE TONALITY ANALYSIS RESULTS

FILE HEADER - cf. Tab. B.1.1.

UNIT AND SOFTWARE SPECIFICATION - cf. Tab. B.1.2.

USER'S TEXT - cf. Tab. B.1.3.

PARAMETERS AND GLOBAL SETTINGS - cf. Tab. B.1.4.

SPECIAL SETTINGS FOR PROFILES - cf. Tab. B.1.5.

MAIN RESULTS - cf. Tab. B.1.5.

HEADER OF THE FFT IN THE WHOLE BAND - cf. Tab. B.1.9.

FFT ANALYSIS RESULTS - cf. Tab. B.1.11.

HEADER OF THE FFT IN THE SELECTED BAND - cf. Tab. B.1.10.

FFT ANALYSIS RESULTS - cf. Tab. B.1.11.

FILE END MARKER - cf. Tab. B.1.18.

B.6. STRUCTURE OF THE FILE CONTAINING RESULTS FROM BUFFER'S FILE

FILE HEADER - cf. Tab. B.1.1.

UNIT AND SOFTWARE SPECIFICATION - cf. Tab. B.1.2.

USER'S TEXT - cf. Tab. B.1.3.

PARAMETERS AND GLOBAL SETTINGS - cf. Tab. B.1.4.

SPECIAL SETTINGS FOR PROFILES - cf. Tab. B.1.5.

HEADER OF THE FILE FROM THE BUFFER - cf. Tab. B.1.16.

CONTENTS OF THE FILE FROM THE BUFFER - cf. Tab. B.1.17.

FILE END MARKER - cf. Tab. B.1.18.