

APPENDIX B. DATA FILE STRUCTURES

B1. Structure of the data file in the METER MODE

The structure of the data file in the **METER MODE**, starting from the internal software version named 2.02, is as follows:

[File identifier]	- one 16-bits word equal to 4010Hex (an exception: a file containing measurement results from SV 06A or / and SV 08A);
Header	- see Tab. B.1.1 or Tab. B.1.2;
Parameters	- see Tab. B.1.3;
Basic results	- see Tab. B.1.4;
[Statistical results]	- see Tab. B.1.5 – optional and only for Microphone or Direct input;
[Header & data in buffer]	- see Tab. B.1.6 - optional;
Checksum	- arithmetic complement of the sum of all words in header and data block.

Table B.1.1. Header of the data file in the METER MODE

Word number	Name	Format	Parameter range
0	header size (including this word)	binary	
1	measurement hour (*)	binary	
2	measurement date (**)	binary	
3	INPUT	binary	1 ÷ 5
4	number of profiles	binary	1 ÷ 5
5	reserved	binary	
6	flags: bit b ₂ - statistics (1 = results present in file) bit b ₃ - buffer flag (1=results present in file) bits b ₀ , b ₁ , b ₄ to b ₁₅ reserved	binary	
7 ÷ (...)	reserved		

Table B.1.2. Header of the data file in the METER MODE for SV 06A and SV 08A modules

Word number	Name	Format	Parameter range
0	header size (including this word)	binary	
1	measurement hour (*)	binary	
2	measurement date (**)	binary	
3	INPUT	binary	6
4	number of channels	binary	5
5	source for AES / EBU	binary	1 ÷ 2
6	flags: bit b ₀ - vector (1 = valid vector result) bit b ₃ - buffer flag (1=results present in file) bits b ₁ , b ₂ , b ₄ to b ₁₅ reserved	binary	
7 ÷ (...)	reserved		

(*) - measurement hour is coded in seconds divided by 2 (e.g. 3601 denotes 02:00:02).

(**) - measurement date is coded as follows:

- day - binary value on bits b₀ to b₄,
- month - binary value on bits b₅ to b₈,
- year - binary value on bits b₉ to b₁₅.

The field called **Parameters** contains five records. The structure of one record from these five is described in Tab. B.1.3.

Table B.1.3. The structure of one Parameters record in the METER MODE

Word number	Name	Format	Parameter range
0	length of the record	binary	
1	input's type (important only for SV 06A and SV 08A modules)	binary	1 ÷ 2
2	measurement function	binary	1 ÷ 8
3	measurement range	binary	1 ÷ 4
4	measurement filter	binary	1 ÷ 21
5	integration time (Δ INT)	binary	4 ÷ 10
6	calibration factor	binary U'2	
7	flags of the result: bit b_0 – calibration bit b_1 – overload bits b_2, b_3 reserved bit b_4, b_5 – type of the RMS detector bit b_6 – underrange bits b_7 to b_{15} reserved	binary	
8	analogue low pass filter (only in the case of SV 06A module)	binary	1 ÷ 2
9	“k” coefficient (only in the case of SV 06A / SV 08A modules)	binary	0 ÷ 200
10 ÷ (...)	reserved		

Basic results consist of five records. The structure of one record is presented in Tab. B.1.4.

Table B.1.4. One record of data file basic results in the METER MODE

Word number	Name	Format	Unit
0	length of the record	binary	
1	measurement time	binary	second
2	CRF result	binary U'2	0.1 dB
3	Peak result	binary U'2	0.1 dB
4	Max result	binary U'2	0.1 dB
5	Min result	binary U'2	0.1 dB
6	Spl result	binary U'2	0.1 dB
7	main RMS result: Leq, Val, Dsl or Ref	binary U'2	0.1 dB
8	SEL result	binary U'2	0.1 dB
9	reserved		
10	ΔMax result	binary U'2	0.1 dB
11	Ltm3 result	binary U'2	0.1 dB
12	Ltm5 result	binary U'2	0.1 dB
13 ÷ 14	reserved		
15	N_1 value	binary U'2	%
16	$L(N_1)$ value	binary U'2	0.1 dB
17	N_2 value	binary U'2	%
18	$L(N_2)$ value	binary U'2	0.1 dB
(...)	(...)	(...)	(...)
33	N_{10} value	binary U'2	%
34	$L(N_{10})$ value	binary U'2	0.1 dB
35 ÷ (...)	reserved		

Statistical results consist of the **header and the table of results**. The structure of the header is presented in Tab. B.1.5.

Table B.1.5. The structure of the header of statistical results in the METER MODE

Word number	Name	Format	Value / Unit
0	header size (including this word)	binary	
1	number of statistics	binary	1
2	number of classes	binary	
3	level of the first class	binary U'2	0.1 dB
4	width of one class	binary U'2	0.1 dB
5 ÷ (...)	reserved	binary	

Table of results consists of the record of 32-bit counters.

Table B.1.6. Header of the result buffer file in the METER MODE

Word number	Name	Format	Unit
0	header size (including this word)	binary	-
1 ÷ 4	reserved	-	-
5	number of the records with results	binary	-
6 ÷ 7	reserved	-	-
8	flags: bit $b_0 = 1$ means the impulse results integrated after ΔINT time bit $b_1 = 1$ means that the buffer is overload (i.e. a part of the last measurements is lost; the buffer was too short!) bits b_2 to b_{15} reserved	binary	-
9 ÷ 10	reserved	-	-
11	single result time (fractional part)	binary	second
12	single result time (integer part)	binary	second
13	single result time (valid if words 11 and 12 are equal 0)	binary	mili-second
14	reserved	-	-
15	number of independent results in one record	binary	-
16	masks of the results: bit b_0 – RMS from the first channel (PROFILE) bit b_1 – Peak from the first channel (PROFILE) bit b_2 – RMS from the second channel (PROFILE) bit b_3 – Peak from the second channel (PROFILE) (...) bit b_8 – RMS of the vector (fifth PROFILE) bit b_9 – Peak of the vector (fifth PROFILE) bits b_{10} to b_{15} reserved Value 1 for any bit means that the measurement result mentioned above is present in the buffer Number of 1's on the bits b_0 to b_9 is equal to the number placed in the 15 th word (number of independent results)	-	-
17 ÷ (...)	reserved		

IT ENDS THE HEADER			
If the number of independent results is greater than 1, the sequence in which the results are placed in the buffer is defined by the masks of the result (the 16 th word) from bits b_0 to b_9 .			
FORMAT OF THE RESULTS BUFFER			
buff ÷ 1	The first record of results	binary U'2	(***)
buff ÷ 2	The second record of results	binary U'2	(***)
(...)	(...)	(...)	(...)
buff ÷ n	The n-th record of results	binary U'2	(***)

Each record of results can contain from 1 to 10 values.

(***) bit b_0 – overload flag; bits $b_1 ÷ b_{15}$ binary U'2 format; value expressed in 0.1 dB units.

Example:

In the case when the 15th word of the header contains 3 and the 16th word of the header is equal to 0000100101 (binary) the structure of the result record is as follows:

- RMS result from the first channel ($b_0=1$);
- RMS result from the second channel ($b_2=1$);
- Peak result from the third channel ($b_5=1$).

The result record does not contain any other results!

B2. Structure of the data file in the ANALYZER MODE

In the **ANALYZER MODE** data file consists of one or more than one spectrum. It can be distinguished by means of the proper flag (see Table B.2.1 and B.2.2 pos. 12, bit b3).



Notice: In the case of the multi-spectra data file, each spectrum is preceded by 16-bit word with "b1" bit as OVERLOAD Flag (b1 = 1 denotes overload).

The structure of the data file in the **ANALYZER MODE**

Header	- see Tab. B.2.1 or Tab. B.2.2.
Data	- data block size (function depended):
TIME:	- 256, 512, 1024, 2048 or 4096 (in the case when ZOOM: OFF), defined indirectly by the parameter "spectrum lines" in the file header - respectively 120, 240, 480, 960 or 1920;
	- 512 (in the case when ZOOM: ON),
SPECTRUM	- 120, 240, 480, 960 or 1920 defined by the parameter "spectrum lines" in the file header,
	or
	- 121, 241, 481, 961 or 1921 defined by the parameter "spectrum lines" in the file header for the multi-spectra data file,
1/1 OCTAVE	- 15 (14 results of the filters and Total),
1/3 OCTAVE	- 45 (44 results of the filters and Total),
	or
	- 50 (44 results of the filters and 6 results Total),



Notice: The results of each spectra are placed from the lowest to the highest frequency. **Total** result (for 1/1 and 1/3 octave) follows the result for the highest frequency.

[DATA]	- in the case of the multi-spectra file;
[...]	
[DATA]	- in the case of the multi-spectra file.
[Header and statistical results]	optionally only for the files with the 1/1 octave and 1/3 octave spectra (see Tab. B.2.3).
Checksum	- the arithmetic complement of the sum of all words in the header and data block.



Notice: In the case of the SV 06A and SV 08A modules the results of **TIME** function (consecutive measurements) are placed in records which number depends on the value of "spectrum lines" parameter (11th word in the header – cf. Tab. B.2.1) and is equal to 256, 512 or 1024. In each record the sequence of four values are placed coming from channels 1, 2, 3 and 4 respectively.



Notice: In the case of the SV 06A and SV 08A modules the results of **SPECTRUM** function are placed in a record in which the sequence of four spectra are placed coming from channels 1, 2, 3 and 4 respectively. The size of block data depends on the value of "spectrum lines" parameter (11th word in the header – cf. Tab. B.2.1) and is equal to 4*120, 4*240 or 4*480.

Table B.2.1. Data files header for Time or Spectrum function

Word number	Name	Format	Parameter range	Control code group
0	header size (including this word)	binary	-	none
1	measurement time (*)	binary	-	none
2	measurement date (**)	binary	-	none
3	input	binary	1 ÷ 6	G
4	function	binary	1, 2	M
5	range for standard one channel input	binary	1 ÷ 4	R
6	weighting filter for standard one channel input	binary	1 Lin filter 2 A filter 3 C filter 6 HP filter	F
7	band	binary	1 ÷ 15	H
8	calibration factor for standard one channel inp.	binary U'2		none
9	averaging mode	binary	1 ÷ 6	C
10	averaging number	binary	2 ÷ 2048	D
11	spectrum lines	binary	120 ÷ 1921	none
12	<p>flags:</p> <p>bit b₀ – calibration flag (1 = on)</p> <p>bit b₁ - overload flag (1 = valid)</p> <p>bit b₂ - statistics (1 = result in the file)</p> <p>bit b₃ - buffer flag (1 = result in the file)</p> <p>bits b₄ & b₅ - reserved</p> <p>bits b₆ to b₉ are only for SV 06/08A modules</p> <p>bit b₆ - overload flag for channel 1 (1= Ovl.)</p> <p>bit b₇ - overload flag for channel 2 (1= Ovl.)</p> <p>bit b₈ - overload flag for channel 3 (1= Ovl.)</p> <p>bit b₉ - overload flag for channel 4 (1= Ovl.)</p> <p>bits from b₁₀ to b₁₅ reserved</p>	binary	-	none
13	trigger mode	binary	1 ÷ 4	A
14	trigger level	binary U'2	±999	B
15	FFT window	binary	1 ÷ 4	I
16	zoom function (On or Off)	binary	1 ÷ 2	Z
17	zoom band	binary	1 ÷ 13	H
18	number of the spectra in the file	binary	-	none
19	zoom central frequency (C.FREQ.)	binary U'2	±128	Y2
20	zoom central frequency (C.FREQ.)	binary U'2	±128	Y3
21	zoom central frequency (C.FREQ.)	binary U'2	±128	Y4
22	zoom central frequency (C.FREQ.)	binary U'2	±128	Y5
23	zoom central frequency (C.FREQ.)	binary U'2	±128	Y6
24	zoom central frequency (C.FREQ.)	binary U'2	±128	Y7
25	zoom central frequency (C.FREQ.)	binary U'2	±128	Y8
26	zoom central frequency (C.FREQ.)	binary U'2	±128	Y9
27	zoom central frequency (C.FREQ.)	binary U'2	±128	Y10
28	zoom central frequency (C.FREQ.)	binary U'2	±128	Y11
29	zoom central frequency (C.FREQ.)	binary U'2	±128	Y12
30	zoom central frequency (C.FREQ.)	binary U'2	±128	Y13
31	zoom central frequency (C.FREQ.)	binary U'2	±128	Y14
32	AES / EBU source	binary	1 – SV 06A, 2 – SV 08A	S (#6)
33	reserved			

34	input - channel 1	binary	0 – Acceler, 1 – Char./Mic.	T (#6)
35	input - channel 2	binary	0 – Acceler. 1 – Char./Mic.	T (#6)
36	input - channel 3	binary	0 – Acceler, 1 – Char./Mic.	T (#6)
37	input - channel 4	binary	0 – Acceler, 1 – Char./Mic.	T (#6)
38	range - channel 1	binary	1 ÷ 4	R (#6)
39	range - channel 2	binary	1 ÷ 4	R (#6)
40	range - channel 3	binary	1 ÷ 4	R (#6)
41	range - channel 4	binary	1 ÷ 4	R (#6)
42	weighting filter - channel 1	binary	1 Lin filter 2 A filter 3 C filter 6 HP filter	F (#6)
43	weighting filter - channel 2	binary	1 Lin filter 2 A filter 3 C filter 6 HP filter	F (#6)
44	weighting filter - channel 3	binary	1 Lin filter 2 A filter 3 C filter 6 HP filter	F (#6)
45	weighting filter - channel 4	binary	1 Lin filter 2 A filter 3 C filter 6 HP filter	F (#6)
46	LP filter - channel 1	binary	1 - On 2 - Off	L (#6)
47	LP filter - channel 2	binary	1 - On 2 - Off	L (#6)
48	LP filter – channel 3	binary	1 - On 2 - Off	L (#6)
49	LP filter – channel 4	binary	1 - On 2 - Off	L (#6)
50	calibration factor - channel 1	binary U'2	-	none
51	calibration factor - channel 2	binary U'2	-	none
52	calibration factor - channel 3	binary U'2	-	none
53	calibration factor - channel 4	binary U'2	-	none
54 ÷ (...)				

(*) - measurement hour is coded in seconds divided by 2 (e.g. 3601 denotes 02:00:02).

(**) - measurement date is coded as follows:

- day -binary value on bits b_0 to b_4 ,
- month -binary value on bits b_5 to b_8 ,
- year -binary value on bits b_9 to b_{15} .

Table B.2.2. Header of the data file for 1/1 OCTAVE or 1/3 OCTAVE

Word number	Name	Format	Parameter range	Contr. code group
0	header size (including this word)	binary	-	none
1	measurement hour (*)	binary	-	none
2	measurement date (**)	binary	-	none
3	INPUT	binary	1 ÷ 5	G
4	FUNCTION	binary	3, 4	M
5	RANGE	binary	1 ÷ 4	R
6	weighting filter	binary	1 Lin filter 2 A filter 3 C filter 4, 6 HP filter	F
7	BAND	binary	14, 15	H
8	calibration factor	binary U'2		none
9	averaging mode	binary	1 ÷ 6	C
10	averaging time	binary	1 ÷ 3600	D
11	results of the filters and Total	binary	15 ÷ 50	none
12	flags: bit b ₀ - calibration flag (1 = on) bit b ₁ - overload flag (1 = valid) bit b ₂ - statistics (1 = results present in file) bit b ₃ - buffer flag (1=results present in file) bit b ₅ & b ₄ - detector type 0 0 linear 0 1 Impulse 1 0 Fast 1 1 Slow bit b ₆ - Total indicator (1 = 6 results Total) bits b ₇ to b ₁₅ reserved	binary	-	none
13	number of the first 1/1 octave or 1/3 octave band value in the file:	binary	1 - 20 kHz for 1/3 octave or 16 kHz for 1/1 octave, 2 - 16 kHz for 1/3 octave or 8 kHz for 1/1 octave, etc.	none
14	number of the spectra in the file	binary	-	none
15(***)	one spectrum integration time (fractional part)	binary	-	-
16(***)	one spectrum integration time (integer part)	binary	-	-
17 ÷ (...)	reserved			

(*) - measurement hour is coded in seconds divided by 2 (e.g. 3601 denotes 02:00:02).

(**) - measurement date is coded as follows:

- day - binary value on bits b₀ to b₄,
- month - binary value on bits b₅ to b₈,
- year - binary value on bits b₉ to b₁₅.

(***) - this word is included in output file if 1/1 octave or 1/3 octave spectra from the buffer are included in the file. For the other files these words are reserved.

Table B.2.3. 1/1 & 1/3 OCTAVE statistical results

Word number	Name	Format	Unit
0	header size (including this word)	binary	
1	N – number of the statistics	binary	
2	K – number of the statistical class	binary	
3	lowest class level	binary U'2	0.1 dB
4	class size	binary U'2	0.1 dB
5 ÷ (...)	reserved		

The **statistical results** consist of N tables. Each table contains K counters of 32 bits where:
 N – number of the statistics (word number 1 of the header);
 K – statistical class (word number 2 of the header).

The first statistics contains as follows:

- 32-bit counter of the first class;
- 32-bit counter of the second class;
- (...)
- 32-bit counter of the Kth class.

The second statistics contains as follows:

- 32-bit counter of the first class;
- 32-bit counter of the second class;
- (...)
- 32-bit counter of the Kth class.

(...)

The Nth statistics contains as follows:

- 32-bit counter of the first class;
- 32-bit counter of the second class;
- (...)
- 32-bit counter of the Kth class.

The statistics are placed from the lowest to highest frequency. Total results follow the results for highest frequency.