

## APPENDIX L

### ASYNCHRONOUS RECORDER MULTIPLEXER OUTPUT RE-CONSTRUCTOR (ARMOR)

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## APPENDIX L

### ASYNCHRONOUS RECORDER MULTIPLEXER OUTPUT RE-CONSTRUCTOR (ARMOR)

#### 1.0 General

This standard defines the recommended multiplexer format for single channel data recording on small format (1/2 in.) media (Chapter 6, Section 6.7). This format is recognized as the Asynchronous Recorder Multiplexer Output Re-Constructor (ARMOR). This format is software-reconfigurable for each data acquisition or reproduction. The ARMOR format configuration information is stored in a data structure called a "setup" that contains all the information necessary to define a particular record or play configuration. This appendix describes the format and content of the ARMOR setup.

1.1 Setup on Tape. When the ARMOR setup is written to tape, it is preceded by a preamble with a unique setup sync pattern that allows the identification of the setup. Three duplicate setup records, each with its own preamble, are written at the beginning of each recording. The format of the preamble is defined in Table L-1.

| TABLE L-1. ARMOR SETUP PREAMBLE |               |   |
|---------------------------------|---------------|---|
| FIELD                           | LENGTH        | DESCRIPTION   |
| SETUP SYNC                      | 4 TAPE BLOCKS | THE SYNC PATTERN CONSISTS OF TWO BYTES. THE HIGH BYTE IS 0XE7; THE LOW BYTE IS 0X3D. THE SYNC PATTERN IS WRITTEN HIGH BYTE FIRST. FOR THE DCRSI, A TAPE BLOCK IS A SINGLE SCAN (4356 BYTES). FOR THE VLDS, A TAPE BLOCK IS A PRINCIPLE BLOCK (65536 BYTES). |
| END OF SYNC                     | 3 BYTES       | THE THREE BYTES IMMEDIATELY FOLLOWING THE SYNC PATTERN ARE: 0X45, 0X4F, 0X53 (ASCII 'E', 'O', 'S' FOR "END OF SYNC").   |

## 2.0 Setup Organization

An ARMOR setup is divided into three sections: the header section, the channel section, and the trailer section. The overall organization of a setup is summarized in Table L-2.

| TABLE L-2. SETUP ORGANIZATION |                              |
|-------------------------------|------------------------------|
| CONTENT                       | NUMBER OF BYTES              |
| HEADER SECTION                | 70                           |
| CHANNEL 1 INFORMATION         | 51 - 61                      |
| CHANNEL 2 INFORMATION         | 51 - 61                      |
| “ “                           | “                            |
| “ “                           | “                            |
| TRAILER SECTION               | 0 - 44 + SAVED SCANLIST SIZE |

2.1 Header Section. The header section is the first 70 bytes of a setup. It contains information about the setup as a whole, including clock parameters, frame parameters, and the numbers of input and output channels (see Table [L-3](#)).



In Tables L-3 through L-12, fields noted with an asterisk (\*) require user input per section 2.5.

**TABLE L-3. HEADER SECTION FORMAT**

| <b>FIELD</b>                 | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|------------------------------|--------------|---------------|--|
| *SETUP LENGTH                | 2            | BINARY        | TOTAL BYTES IN SETUP, INCLUDING THIS FIELD   |
| SOFTWARE VERSION             | 12           | ASCII         | VERSION OF THE ARMOR SETUP AND CONTROL SOFTWARE THAT WROTE THE SETUP   |
| PRE-SCALERS                  | 1            | BINARY        | THE BOTTOM FOUR BITS CONTAIN THE BIT RATE CLOCK PRE-SCALER; THE TOP FOUR BITS CONTAIN THE PACER CLOCK PRE-SCALER.                  |
| RESERVED                     | 26           | N/A           | N/A  |
| *SETUP KEYS (BIT 0)          | 1            | BINARY        | IF BIT 0 (LSB) SET, SETUP CONTAINS SETUP DESCRIPTION IN TRAILER.   |
| *SETUP KEYS (BITS 1, 2, & 3) |              |               | IF BIT 1 SET, SETUP CONTAINS CHECKSUM IN TRAILER. IF BIT 2 SET, SETUP IS SCAN-ALIGNED. IF BIT THREE SET THEN A SCAN LIST IS SAVED. |
| PACER DIVIDER                | 2            | BINARY        | PACER DIVIDER VALUE  |
| BIT RATE                     | 4            | BINARY        | AGGREGATE BIT RATE FOR ALL ENABLED CHANNELS  |
| BRC DIVIDER                  | 2            | BINARY        | BIT RATE CLOCK DIVIDER VALUE   |
| MASTER OSCILLATOR            | 4            | BINARY        | FREQUENCY OF THE MASTER OSCILLATOR IN BITS PER SECOND  |
| BYTES OVERHEAD               | 4            | BINARY        | TOTAL SYNC BYTES PLUS FILLER BYTES PER FRAME.  |
| PACER                        | 4            | BINARY        | FREQUENCY OF THE PACER CLOCK IN CYCLES PER SECOND  |
| FRAME RATE                   | 4            | BINARY        | NUMBER OF FRAMES PER SECOND  |
| *INPUT COUNT                 | 2            | BINARY        | NUMBER OF INPUT CHANNELS IN SETUP  |
| OUTPUT COUNT                 | 2            | BINARY        | NUMBER OF OUTPUT CHANNELS IN SETUP   |

2.2 Channel Section. The channel section contains one channel entry for every channel in the multiplexer chassis configuration, including those channels that are not enabled or recorded. The content and length of the channel information vary depending on the channel type. The lengths of the channel entries for each channel type are presented in Table L-4. Tables L-5 through L-14 describe the channel entry fields for each module type. Links to the tables are provided below.

|                             |                                  |
|-----------------------------|----------------------------------|
| <a href="#">TABLE L-4.</a>  | CHANNEL ENTRY LENGTHS            |
| <a href="#">TABLE L-5.</a>  | PCM INPUT CHANNELS               |
| <a href="#">TABLE L-6.</a>  | ANALOG INPUT AND OUTPUT CHANNELS |
| <a href="#">TABLE L-7.</a>  | ANALOG INPUT AND OUTPUT CHANNELS |
| <a href="#">TABLE L-8.</a>  | PARALLEL INPUT CHANNELS          |
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| <a href="#">TABLE L-10.</a> | TIME CODE INPUT CHANNELS         |
| <a href="#">TABLE L-11.</a> | TIME CODE OUTPUT CHANNELS        |
| <a href="#">TABLE L-12.</a> | VOICE INPUT CHANNEL              |
| <a href="#">TABLE L-13.</a> | VOICE OUTPUT CHANNELS            |
| <a href="#">TABLE L-14.</a> | BIT SYNC INPUT CHANNELS          |

| <b>TABLE L-4. CHANNEL ENTRY LENGTHS</b> |              |
|---|--------------|
| <b>CHANNEL TYPE</b>                     | <b>BYTES</b> |
| PCM INPUT AND OUTPUT                    | 51           |
| ANALOG INPUT AND OUTPUT                 | 53           |
| PARALLEL INPUT                          | 53           |
| PARALLEL OUTPUT                         | 56           |
| TIMECODE INPUT AND OUTPUT               | 61           |
| VOICE INPUT AND OUTPUT                  | 61           |
| BIT SYNC INPUT                          | 61           |

**TABLE L-5. PCM INPUT CHANNELS**

| <b>FIELD</b>    | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>  |
|-----------------|--------------|---------------|---|
| *CHANNEL TYPE   | 2            | BINARY        | 1 = 8 BIT PCM INPUT<br>8 = 20 MBIT PCM INPUT  |
| MAPPED CHANNEL  | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1.  |
| *ENABLED        | 1            | ASCII         | IF ENABLED, THE CHANNEL IS RECORDED ("Y" OR "N")  |
| ACTUAL RATE     | 4            | BINARY        | ACTUAL WORD RATE IN WORDS PER SECOND  |
| WORDS PER FRAME | 4            | BINARY        | NUMBER OF WORDS PER FRAME   |
| INPUT MODES     | 1            | BINARY        | IF BIT 0 (LSB) SET, SOURCE B DATA; ELSE SOURCE A. IF BIT 1 SET, NRZ-L; ELSE BI-PHASE-L. IF BIT 2 SET, 0 DEGREE CLOCK; ELSE 90 DEGREE CLOCK. |
| RESERVED        | 3            | N/A           | N/A   |
| BITS PER WORD   | 2            | BINARY        | 16 BITS   |
| BITS PRECEDING  | 4            | BINARY        | NUMBER OF BITS IN THE FRAME THAT MUST PRECEDE THIS CHANNEL  |
| *CHANNEL NUMBER | 2            | BINARY        | CHANNEL ON MODULE (0-3)   |
| *MODULE ID      | 1            | BINARY        | MODULE ID = HEX 11  |
| RESERVED        | 1            | N/A           | N/A   |
| *REQUESTED RATE | 4            | BINARY        | REQUESTED BITS PER SECOND (INTEGER)   |
| DESCRIPTION     | 20           | ASCII         | CHANNEL DESCRIPTION   |



**TABLE L-6. ANALOG INPUT AND OUTPUT CHANNELS**

| <b>FIELD</b>    | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|-----------------|--------------|---------------|--|
| CHANNEL TYPE    | 2            | BINARY        | 2 = 8 MBIT PCM OUTPUT<br>9 = 20 MBIT PCM OUTPUT  |
| MAPPED CHANNEL  | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1. |
| ENABLED         | 1            | ASCII         | IF ENABLED, THE CHANNEL IS RECORDED ("Y" OR "N").  |
| ACTUAL RATE     | 4            | BINARY        | ACTUAL WORD RATE IN WORDS PER SECOND   |
| WORDS PER FRAME | 4            | BINARY        | NUMBER OF WORDS PER FRAME  |
| OUTPUT MODES    | 1            | BINARY        | IF BIT 0 (LSB) SET, BURST MODE. IF BIT 1 SET, BI-PHASE; ELSE NRZ-L.                            |
| RESERVED        | 3            | N/A           | N/A  |
| BITS PER WORD   | 2            | BINARY        | NUMBER OF BITS PER WORD  |
| BITS PRECEDING  | 4            | BINARY        | NUMBER OF BITS IN THE FRAME THAT MUST PRECEDE THIS CHANNEL                                     |
| CHANNEL NUMBER  | 2            | BINARY        | CHANNEL ON MODULE (0-3)  |
| MODULE ID       | 1            | BINARY        | MODULE ID = HEX 21   |
| RESERVED        | 1            | N/A           | N/A  |
| REQUESTED RATE  | 4            | BINARY        | REQUESTED BITS PER SECOND  |
| DESCRIPTION     | 20           | ASCII         | CHANNEL DESCRIPTION  |

**TABLE L-7. ANALOG INPUT AND OUTPUT CHANNELS**

| <b>FIELD</b>      | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|-------------------|--------------|---------------|--|
| *CHANNEL TYPE     | 2            | BINARY        | 5 = LF ANALOG INPUT<br>6 = HF ANALOG INPUT<br>7 = ANALOG OUTPUT                                |
| MAPPED CHANNEL    | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1. |
| *ENABLED          | 1            | ASCII         | IF ENABLED, THE CHANNEL IS RECORDED ("Y" OR "N").  |
| ACTUAL RATE       | 4            | BINARY        | ACTUAL SAMPLE RATE IN SAMPLES PER SECOND   |
| SAMPLES PER FRAME | 4            | BINARY        | NUMBER OR SAMPLES PER FRAME  |
| FILTER NUMBER     | 1            | BINARY        | 0 = FILTER 1<br>1 = FILTER 2<br>2 = FILTER 3<br>3 = FILTER 4                                   |
| RESERVED          | 3            | N/A           | N/A  |
| *BITS PER SAMPLE  | 2            | BINARY        | NUMBER OF BITS PER SAMPLE (8 OR 12)  |
| RESERVED          | 4            | N/A           | N/A  |
| *CHANNEL NUMBER   | 2            | BINARY        | CHANNEL ON MODULE (0-3)  |
| *MODULE ID        | 1            | BINARY        | MODULE ID = 34 HEX (LF) OR 33 HEX (HF)   |
| RESERVED          | 1            | N/A           | N/A  |
| *REQUESTED RATE   | 4            | BINARY        | REQUESTED SAMPLES PER SECOND   |
| RESERVED          | 2            | N/A           | N/A  |
| DESCRIPTION       | 20           | ASCII         | CHANNEL DESCRIPTION  |

**TABLE L-8. PARALLEL INPUT CHANNELS**

| <b>FIELD</b>    | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>  |
|-----------------|--------------|---------------|---|
| *CHANNEL TYPE   | 2            | BINARY        | 13 = NEW PARALLEL INPUT   |
| MAPPED CHANNEL  | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1.  |
| *ENABLED        | 1            | ASCII         | IF ENABLED, THE CHANNEL IS RECORDED ("Y" OR "N").   |
| ACTUAL RATE     | 4            | BINARY        | ACTUAL WORDS PER SECOND   |
| WORDS PER FRAME | 4            | BINARY        | NUMBER OF WORDS PER FRAME   |
| RESERVED        | 4            | N/A           | N/A   |
| BITS PER WORD   | 2            | BINARY        | NUMBER OF BITS PER WORD   |
| WORDS PRECEDING | 4            | BINARY        | NUMBER OF WORDS IN THE FRAME THAT MUST PRECEDE THIS CHANNEL   |
| *CHANNEL NUMBER | 2            | BINARY        | CHANNEL ON MODULE (0-3)   |
| *MODULE ID      | 1            | BINARY        | MODULE ID = HEX 92  |
| RESERVED        | 1            | N/A           | N/A   |
| *REQUESTED RATE | 4            | BINARY        | REQUESTED WORDS PER SECOND.   |
| INPUT MODE      | 1            | BINARY        | 0 = FOUR 8-BIT CHANNELS<br>1 = ONE 16-BIT, TWO 8-BIT (CURRENTLY UNAVAILABLE)<br>2 = TWO 16-BIT (CURRENTLY UNAVAILABLE)<br>3 = ONE 32-BIT (CURRENTLY UNAVAILABLE)<br>4 = ONE 24-BIT, ONE 8-BIT (CURRENTLY UNAVAILABLE) |
| RESERVED        | 1            | N/A           | N/A   |
| DESCRIPTION     | 20           | ASCII         | CHANNEL DESCRIPTION   |

**TABLE L-9. PARALLEL OUTPUT CHANNELS**

| <b>FIELD</b>     | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|------------------|--------------|---------------|--|
| CHANNEL TYPE     | 2            | BINARY        | 14 = NEW PARALLEL OUTPUT   |
| MAPPED CHANNEL   | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1.   |
| ENABLED          | 1            | ASCII         | IF ENABLED, THE CHANNEL IS RECORDED ("Y" OR "N").  |
| ACTUAL RATE      | 4            | BINARY        | ACTUAL WORD RATE IN WORDS PER SECOND   |
| WORDS PER FRAME  | 4            | BINARY        | NUMBER OF WORDS PER FRAME  |
| RESERVED         | 4            | N/A           | N/A  |
| BITS PER WORD    | 2            | BINARY        | NUMBER OF BITS PER WORD  |
| WORDS PRECEDING  | 4            | BINARY        | NUMBER OF WORDS IN THE FRAME THAT MUST PRECEDE THIS CHANNEL  |
| CHANNEL NUMBER   | 2            | BINARY        | CHANNEL ON MODULE (0-3)  |
| MODULE ID        | 1            | BINARY        | MODULE ID = HEX A2   |
| RESERVED         | 1            | N/A           | N/A  |
| REQUESTED RATE   | 4            | BINARY        | REQUESTED WORDS PER SECOND   |
| OUTPUT MODE      | 1            | BINARY        | 0 = FOUR 8-BIT CHANNELS<br>1 = ONE 16-BIT, TWO 8-BIT<br>2 = TWO 16-BIT CHANNELS<br>3 = ONE 32-BIT CHANNEL<br>4 = ONE 24-BIT, ONE 8-BIT<br>7 = TWO 8-BIT DCRSI MODE |
| RECONSTRUCT MODE | 1            | BINARY        | 0 = DATA IS FROM MODULE OTHER THAN PARALLEL INPUT.<br>1 = DATA IS FROM PARALLEL INPUT. VALID ONLY FOR OUTPUT MODE.   |
| DCRSI OUTPUT     | 1            | BINARY        | 0 = HEADER AND DATA<br>1 = HEADER ONLY<br>3 = DATA VALID ONLY FOR OUTPUT MODE 7.   |

**TABLE L-9. PARALLEL OUTPUT CHANNELS  
(Continued)**

| <b>FIELD</b>     | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>                                |
|------------------|--------------|---------------|---|
| BURST SELECT     | 1            | BINARY        | 0 = CONSTANT<br>1 = BURST                         |
| HANDSHAKE SELECT | 1            | BINARY        | 0 = DISABLE HANDSHAKING<br>1 = ENABLE HANDSHAKING |
| DESCRIPTION      | 20           | ASCII         | CHANNEL DESCRIPTION                               |

**TABLE L-10. TIME CODE INPUT CHANNELS**

| <b>FIELD</b>         | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>  |
|----------------------|--------------|---------------|---|
| *CHANNEL TYPE        | 2            | BINARY        | TIME CODE MUST APPEAR AS A GROUP OF 3 CHANNELS, EVEN THOUGH THE USER INTERFACE ONLY DISPLAYS A SINGLE CHANNEL. THE RESPECTIVE TYPES ARE 15, 19, AND 20. |
| MAPPED CHANNEL       | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1.  |
| *ENABLED             | 1            | ASCII         | “Y” OR “N”  |
| ACTUAL RATE          | 4            | BINARY        | 1   |
| SAMPLES PER FRAME    | 4            | BINARY        | 1   |
| RESERVED             | 4            | N/A           | N/A   |
| *BITS PER WORD       | 2            | BINARY        | 24 FOR CHANNEL TYPE 15<br>24 FOR CHANNEL TYPE 19<br>16 FOR CHANNEL TYPE 20  |
| RESERVED             | 4            | N/A           | N/A   |
| *CHANNEL NUMBER      | 2            | BINARY        | 0 FOR CHANNEL TYPE 15<br>1 FOR CHANNEL TYPE 19<br>2 FOR CHANNEL TYPE 20   |
| *MODULE ID           | 1            | BINARY        | MODULE ID = HEX B1  |
| RESERVED             | 1            | N/A           | N/A   |
| *REQUEST SAMPLE RATE | 4            | BINARY        | 1   |
| *BITS PER SAMPLE     | 2            | BINARY        | 24 FOR CHANNEL TYPE 15<br>24 FOR CHANNEL TYPE 19<br>16 FOR CHANNEL TYPE 20  |
| DESCRIPTION          | 20           | ASCII         | CHANNEL DESCRIPTION   |
| RESERVED             | 4            | N/A           | N/A   |
| TCI MODE             | 1            | BINARY        | 0 = GENERATE TIME<br>1 = USE EXTERNAL IRIG SOURCE   |
| RESERVED             | 3            | N/A           | N/A   |

**TABLE L-11. TIME CODE OUTPUT CHANNELS**

| <b>FIELD</b>          | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|-----------------------|--------------|---------------|--|
| CHANNEL TYPE          | 2            | BINARY        | TIME CODE MUST APPEAR AS A GROUP OF 3 CHANNELS, EVEN THOUGH THE USER INTERFACE ONLY DISPLAYS A SINGLE CHANNEL. THE RESPECTIVE TYPES ARE 17, 21 AND 22. |
| MAPPED CHANNEL        | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1.   |
| ENABLED               | 1            | ASCII         | “Y” - ENABLED, OR “N” - DISABLED   |
| ACTUAL RATE           | 4            | BINARY        | 1  |
| SAMPLES PER FRAME     | 4            | BINARY        | 1  |
| RESERVED              | 4            | N/A           | N/A  |
| BITS PER WORD         | 2            | BINARY        | 24 FOR CHANNEL TYPE 17<br>24 FOR CHANNEL TYPE 21<br>16 FOR CHANNEL TYPE 22   |
| RESERVED              | 4            | N/A           | N/A  |
| CHANNEL NUMBER        | 2            | BINARY        | 0 FOR CHANNEL TYPE 17<br>1 FOR CHANNEL TYPE 21<br>2 FOR CHANNEL TYPE 22  |
| MODULE ID             | 1            | BINARY        | MODULE ID = HEX B1   |
| RESERVED              | 1            | N/A           | N/A  |
| REQUESTED SAMPLE RATE | 4            | BINARY        | 1  |
| BITS PER SAMPLE       | 2            | BINARY        | 24 FOR CHANNEL TYPE 17<br>24 FOR CHANNEL TYPE 21<br>16 FOR CHANNEL TYPE 22   |
| DESCRIPTION           | 20           | ASCII         | CHANNEL DESCRIPTION  |
| RESERVED              | 4            | N/A           | N/A  |
| TCO MODE              | 1            | BINARY        | 0 - GENERATE TIME<br>1 - USE TIME FROM RECORDED TAPE   |
| RESERVED              | 3            | N/A           | N/A  |

**TABLE L-12. VOICE INPUT CHANNEL**

| <b>FIELD</b>           | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|------------------------|--------------|---------------|--|
| *CHANNEL TYPE          | 2            | BINARY        | 16   |
| MAPPED CHANNEL         | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1. |
| *ENABLED               | 1            | ASCII         | “Y” - ENABLED, OR “N” - DISABLED   |
| ACTUAL RATE            | 4            | BINARY        | ACTUAL SAMPLE RATE IN SAMPLES PER SECOND   |
| SAMPLES PER FRAME      | 4            | BINARY        | NUMBER OF SAMPLES PER FRAME  |
| RESERVED               | 4            | N/A           | N/A  |
| *BITS PER WORD         | 2            | BINARY        | 8  |
| RESERVED               | 4            | N/A           | N/A  |
| *CHANNEL NUMBER        | 2            | BINARY        | 3  |
| *MODULE ID             | 1            | BINARY        | MODULE ID = HEX B1   |
| RESERVED               | 1            | N/A           | N/A  |
| *REQUESTED SAMPLE RATE | 4            | BINARY        | 2K, 5K, 10K, 20K, 50K, OR 100K   |
| *BITS PER SAMPLE       | 2            | BINARY        | 8  |
| DESCRIPTION            | 20           | ASCII         | CHANNEL DESCRIPTION  |
| RESERVED               | 1            | N/A           | N/A  |
| VOLTAGE GAIN           | 2            | BINARY        | 0 - GAIN OF 1<br>1 - GAIN OF 2<br>2 - GAIN OF 4<br>3 - GAIN OF 8                               |
| RESERVED               | 5            | N/A           | N/A  |



**TABLE L-13. VOICE OUTPUT CHANNELS**

| <b>FIELD</b>        | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>  |
|---------------------|--------------|---------------|---|
| CHANNEL TYPE        | 2            | BINARY        | 18  |
| MAPPED CHANNEL      | 2            | BINARY        | INDEX OF THE CHANNEL THIS CHANNEL IS MAPPED TO. IF THE CHANNEL IS NOT MAPPED, THE INDEX IS -1 |
| ENABLED             | 1            | ASCII         | “Y” - ENABLED, OR “N” - DISABLED  |
| ACTUAL RATE         | 4            | BINARY        | ACTUAL SAMPLE RATE IN SAMPLES PER SECOND  |
| SAMPLES PER FRAME   | 4            | BINARY        | NUMBER OF SAMPLES PER FRAME   |
| RESERVED            | 4            | N/A           | N/A   |
| BITS PER WORD       | 2            | BINARY        | 8   |
| RESERVED            | 4            | N/A           | N/A   |
| CHANNEL NUMBER      | 2            | BINARY        | 3   |
| MODULE ID           | 1            | BINARY        | MODULE ID = HEX B1  |
| RESERVED            | 1            | N/A           | N/A   |
| REQUEST SAMPLE RATE | 4            | BINARY        | NUMBER OF SAMPLES PER SECOND  |
| BITS PER SAMPLE     | 2            | BINARY        | 8   |
| DESCRIPTION         | 20           | ASCII         | CHANNEL DESCRIPTION   |
| RESERVED            | 8            | N/A           | N/A   |

**TABLE L-14. BIT SYNC INPUT CHANNELS**

| <b>FIELD</b>                    | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>   |
|---------------------------------|--------------|---------------|--|
| CHANNEL TYPE                    | 2            | BINARY        | 23   |
| RESERVED                        | 2            | N/A           | N/A  |
| ENABLED                         | 1            | ASCII         | “Y” - ENABLED, OR “N” - DISABLED                                 |
| ACTUAL RATE                     | 4            | BINARY        | ACTUAL WORD RATE IN WORDS PER SECOND                             |
| WORDS PER FRAME                 | 4            | BINARY        | NUMBER OR WORDS PER FRAME  |
| RESERVED                        | 4            | N/A           | N/A  |
| BITS PER WORD                   | 2            | BINARY        | 16   |
| RESERVED                        | 4            | N/A           | N/A  |
| CHANNEL NUMBER                  | 2            | BINARY        | CHANNEL ON MODULE (0-3)  |
| MODULE ID                       | 1            | BINARY        | MODULE ID = HEXADECIMAL 13                                       |
| RESERVED                        | 1            | N/A           | N/A  |
| REQUESTED RATE                  | 4            | BINARY        | BITS PER SECOND  |
| DESCRIPTION                     | 20           | ASCII         | CHANNEL DESCRIPTION  |
| INSTALLED                       | 1            | BINARY        | 0 = DAUGHTER BOARD NOT INSTALLED<br>1 = DAUGHTER BOARD INSTALLED |
| PCM<br>GEOGRAPHICAL.<br>ADDRESS | 1            | BINARY        | GEOGRAPHICAL ADDRESS OF THE<br>ASSOCIATED PCM INPUT CHANNEL      |
| SOURCE CLOCK                    | 1            | BINARY        | 0 = SOURCE A<br>1 = SOURCE B                                     |
| RESERVED                        | 7            | N/A           | N/A  |

2.3 Trailer Section. The trailer section contains the setup description and the checksum (see Table L-15). Early versions of the setup do not contain this information. The “Setup Keys” field in the header indicates the content of the trailer section.

| <b>TABLE L-15. TRAILER SECTION FORMAT</b> |              |               |   |
|---|--------------|---------------|---|
| <b>FIELD</b>                              | <b>BYTES</b> | <b>FORMAT</b> | <b>DESCRIPTION</b>  |
| SETUP DESCRIPTION                         | 40           | ASCII         | DESCRIPTION OF THE SETUP  |
| SAVED SCANLIST                            | VARIES       | BINARY        | NUMBER OF BYTES DEPENDS ON THE NUMBER OF CHANNELS BEING RECORDED. |
| CHECKSUM                                  | 4            | BINARY        | SUM OF ALL SETUP BYTES  |

2.4 Saved Scan-list Structure. This is an array of enabled input channels that make up the calculated scan-list. Each element of the array is made up of two fields, an index field and a count field. The length of the index field is one byte, and the length of the count field is two bytes.

- a. The index field, which is 1-based, is determined by the position of the channel’s module in the ARMOR system. The first input channel found in the ARMOR system is assigned an index of one (1), the next input channel is assigned a two (2), and so on. The search for input modules starts at slot 1. Filler bytes are assigned an index value of 255.
- b. The count field is the number of words/samples per frame that is assigned to that input channel.

2.5 Creating a Setup Block. Creating a Setup Block involves two steps. In the first step, the user creates an “input” setup block file as described below in this section. Most of the fields in the input setup block file are unspecified (filled with zeros). In the second step, the input setup block file is read by the ARMOR compiler program that produces a new setup block file with all the unspecified fields initialized to the appropriate values. In other words, a setup block has two types of fields, user specified and compiler generated. Note that all compiler-generated fields must be provided in the input setup block file and initialized with zeros prior to executing the ARMOR compiler program.

The rules presented in this section must be explicitly followed to create an ARMOR input setup block. Values for fields identified in the previous tables with an asterisk preceding the field name must be provided. In some cases, the values for these required fields are constant and are specified in the tables above. In other cases, the user must provide the desired value. All

fields with names not identified with asterisks must be initialized to binary zero. This includes both “unused” and “reserved” fields.

Only input channel information entries are required. Output channel information entries are ignored by the ARMOR compiler program.

### 2.5.1 Header Section.

Setup Length: Count the total numbers of bytes in the created setup block and put the value here.

Setup Keys: Set bit 0 = 1 if the trailer contains a description. Leave other bits = 0.

Input Count: Enter the total number of input channel information entries, including both enabled and disabled entries.

2.5.2 Channel Section. PCM, low frequency (LF) analog, and parallel input channel information entries must be included in the setup block in groups of four entries per type. High frequency (HF) analog input channel information entries must be included in the setup block in groups of two entries per type. Time code/voice input channel information entries must be included in groups of three time code entries and one voice entry. Specifying an ASCII “N” in the enabled field must disable all unused input channel information entries. For each channel information entry group, the channel number field of the first entry in the group is zero (0), the second entry is one (1), the third is two (2), and the fourth is three (3). For the time code/voice group, the time code entry channel number fields are 0, 1, and 2, respectively, while the voice entry channel number field is 3. HF analog entry channel number fields are 0 and 1, respectively.

Description fields are not required and are not specified below. However, it is advisable to include an ASCII description of each channel for future reference.

#### 2.5.2.1 PCM Input Channels

Channel Type: Binary 8

Enabled: ASCII “Y” if enabled, “N” if disabled

Channel Number: Binary 0, 1, 2, or 3 as described in 2.5.2 above

Module ID: Hexadecimal 11

Requested Rate: Binary integer rate in bits per second

### 2.5.2.2 Analog Input Channels

|                  |   |
|------------------|---|
| Channel Type:    | Binary 5 for LF (up to 1 megasample/sec), 6 for HF (up to 10 megasamples/sec)               |
| Enabled:         | “Y” if enabled, “N” if disabled   |
| Bits per Sample: | 8 or 12   |
| Channel Number:  | 0, 1, 2, or 3 as described in 2.5.2 above   |
| Module ID:       | Hexadecimal 34 (LF) or 33 (HF)  |
| Requested Rate:  | Binary integer 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1M (LF, HF) 2.5M, 5M, 10M (HF only) |

### 2.5.2.3 Parallel Input Channels.

|                 |   |
|-----------------|---|
| Channel Type:   | Decimal 13                                    |
| Enabled:        | “Y” if enabled, “N” if disabled               |
| Channel Number: | 0, 1, 2, or 3 as described in 2.5.2 above     |
| Module ID:      | Hexadecimal 92                                |
| Requested Rate: | Binary integer 8-bit words (bytes) per second |

### 2.5.2.4 Time Code Input Channels.

|                  |  |
|------------------|--|
| Channel Type:    | Decimal 15 (1 <sup>st</sup> entry), 19 (2 <sup>nd</sup> entry), 20 (3 <sup>rd</sup> entry) |
| Enabled:         | “Y” if enabled, “N” if disabled, all three entries must be the same                        |
| Bits per Word:   | Decimal 24 (1 <sup>st</sup> entry), 24 (2 <sup>nd</sup> entry), 16 (3 <sup>rd</sup> entry) |
| Channel Number:  | 0, 1, or 2 as described in 2.5.2 above   |
| Module ID:       | Hexadecimal B1   |
| Requested Rate:  | 1  |
| Bits per Sample: | Decimal 24 (1 <sup>st</sup> entry), 24 (2 <sup>nd</sup> entry), 16 (3 <sup>rd</sup> entry) |

### 2.5.2.5 Voice Input Channels.

|                  |                                 |
|------------------|---------------------------------|
| Channel Type:    | Decimal 16                      |
| Enabled:         | “Y” if enabled, “N” if disabled |
| Bits per Word:   | 8                               |
| Channel Number:  | 3 as described in 2.5.2 above   |
| Requested Rate:  | Integer 2K, 5K, 10K, 50K, 100K  |
| Bits per Sample: | 8                               |

2.5.3 Trailer Section. The trailer section of the input setup block is not required. The user may include an ASCII text setup description in the trailer section by setting the setup keys bit 0 = 1 in the header section (see paragraph [2.5.1](#) above) and adding the setup description field only in the trailer section.

2.5.4 ARMOR Compiler Program. Operational instructions for the ARMOR compiler program are provided in the readme.txt file provided with the compiler (see Chapter 6, paragraph 6.7.3.1).

**\*\*\*\* END OF APPENDIX L \*\*\*\***