

4.3 Printer Output Description

Figures 4.1.1 and 4.1.2 explain the various outputs from the printer. The units of measurement are nanovolts per amp for the transient voltages, and milliohm-metres for the resistivities.

An asterisk will be printed between the mantissa and the exponent if sferics are selected and the number of stacks rejected for that channel exceeds half the number of stacks transmitted.

Asterisks will be printed for any percentage errors exceeding 999%.

An asterisk will appear to the right of the total stacks rejected figure if sferics and stacks rejected have both been selected. If % error has been selected, no asterisk will appear.

Minus signs will be printed instead of resistivities if the voltages are negative, decimal points if the value is too small to calculate, and asterisks if the value is too large.

Table 4.1 lists the printed values for gain, early times/standard times mode, and transmitter mode, against their actual values. The information listed in APPENDIX II, pages 63 and 64, also applies exactly to the printout.

	PRINTED VALUES			
	0	1	2	3
GAIN	x1/10	x1	x10	x100
ET/ST MODE	ST MODE NO ET	NOT DEFINED	ET MODE ET/ST	ST MODE ET/ST
TX MODE	INTERNAL 10 A	EXTERNAL 10 A	EXTERNAL 20 A	EXTERNAL 100 A

Table 4.1 : Operating Parameter Printer Codes

The interface logic card (IFLC) switch setting is factory set and should not be altered.

```

Initial stack
rejections -----> *****
                      *****
                      *****
12 3456789012 <----- Annotation

Cassette write
error warning -----> ***** nV <----- Nanovolts/Amp
                      A
1 5608 4 0
2 4939 4 0
3 4349 4 0
4 3830 4 0
Channel number ----> 5 3373 4 0
6 2793 4 0
7 2166 4 0
8 1681 4 0
9 1303 4 0 <----- Number of stacks rejected
10 1010 4 0 (or % error, if selected)
11 6962 3 0
12 4192 3 0
13 2526 3 0
14 1518 3 0
15 9170 2 0 <----- Value = 9170 x 102 nV/A
16 4442 2 0
17 1691 2 0
18 4421 1 0
19 1045 1 2
20 3379 0 5
21 2786 0 3
22 1364 0 1
23 1028 0 4
24 847 0 7
25 609 0 9
26 515 0 14
27 303 0 22
28 223 0 31
29 129 0 37
30 87 0 49
31 23 0 55
32 19*0 65- <----- Negative nV/A value
Mantissa -----> -----> Exponent
Gain -----> 1 128 <----- Half stacks warning
ST/ET mode -----> 2 3.3 <----- Total number of stacks
<----- Average loop current
TX mode -----> 0 25 <----- Sferics percentage
IFLC switch -----> 1 304 * <----- Stacks rejected indicator
(See Table 4.1) -----> -----> Total stacks rejected
200 <----- Loop size
4.2 <----- Software version

```

Figure 4.1.1 : SIROTEM Printout With Sferics On

```

12 3456789012 <---- Annotation

nV <---- Nanovolts/Amp
A

1 3789 0 0
2 2547 0 0
3 1541 0 0 <---- Value = 1541 x 100 nV/A
4 907 0 0
Channel number ----> 5 471 0 0
6 184 0 1
7 71 0 2
8 30 0 5
9 15 0 13 <---- Percentage error
10 3 0 24
11 3 0 72
12 2 0 *** <---- Error exceeds 999 %
13 0 0 110
14 2 0 60- <---- Negative nV/A value
15 0 0 105
16 1 0 248- <---- Negative nV/A value
Mantissa ----- Exponent

Gain ----> 1 128 <---- Total number of stacks
ST/ET mode ----> 3 3.4 <---- Average loop current

TX mode ----> 0 0 <---- Sferics level (off)
IFLC switch ----> 1 0 <---- Total stacks rejected

(See Table 4.1) 200 <---- Loop size
4.2 <---- Software version

m <---- Milliohm-metres
U
M

1 ***** <---- Value exceeds 536870912
2 222602571
3 158317524
4 139560131
Channel number ----> 5 148925399
6 179499522
7 216700904 <---- Apparent resistivity
8 270707625
9 321439110
10 *****
11 *****
12 499082126
13 *****
14 ----- <---- Resistivity undefined
15 ***** for negative voltages
16 -----

```

Figure 4.1.2 : SIROTEM Printout With Resistivity On

APPENDIX II

SPECIFICATION OF DATA FORMAT ON CASSETTE

Data is recorded on tape as a series of records, each record consisting of from 4 to 8 fixed length blocks of 82 ASCII 8 bit characters, the number of blocks depending on the number of channels selected. The inter-block and inter-record gaps are approximately 1 inch (2.54 cm) long.

The block format is as follows:

1st Block : '<' character
12 annotation characters
3 spaces
4 groups of channel readings (See Note 1)
Carriage return (CR)
Linefeed (LF)

Intermediate Blocks : 5 groups of channel readings (See Note 1)
CR
LF

2nd Last Block : x groups of channel readings (See Note 2)
5-x groups of operating parameters
CR (See Note 1)
LF

Last Block : x+1 groups of operating parameters
78-16(x+1) spaces required to fill the block
1 checksum character (See APPENDIX VI)
'>' character
CR
LF

Note 1 : The 79th character in each block is the checksum character

Note 2 : The value of x depends on the number of channels selected

The data stored by SIROTEM has leading zeroes suppressed and spaces substituted, and each channel reading consists of 16 characters as follows:

2 digit channel number
4 digit mantissa (nV/A value)
1 space, or an asterisk if more than half the stacks were rejected
1 digit exponent (power of 10)
1 space and a 3 digit error value, or a 4 digit number of stacks rejected
1 space, or minus sign
3 spaces

The format of the operating parameter groups is as follows:

- 1: 1 space
 1 digit gain setting (See Note 3)
 3 spaces
 4 digit number of stacks setting
 7 spaces

- 2: 1 space
 1 digit ST/ET mode setting (See Note 4)
 2 spaces
 5 digit current value
 7 spaces

- 3: 1 space
 1 digit TX mode setting (See Note 5)
 4 spaces
 3 digit sferics percentage setting
 7 spaces

- 4: 1 space
 1 digit IFLC switch setting (See Note 6)
 2 spaces
 5 digit total number of stacks rejected
 2 spaces
 1 space for error, or an asterisk for readings rejected
 4 spaces

- 5: 6 spaces
 3 digit loopsize setting
 7 spaces

- 6: 6 spaces
 3 digit software version
 7 spaces

Note 3 : 0 = Gain 1/10
 1 = Gain X1
 2 = Gain X10
 3 = Gain X100

Note 4 : 0 = ST SIROTEM Only
 1 = Not Defined
 2 = ST/ET SIROTEM, ET Mode
 3 = ST/ET SIROTEM, ST Mode

Note 5 : 0 = TX Internal
 1 = TX External, 10 Amps
 2 = TX External, 20 Amps
 3 = TX External, 100 Amps

Note 6 : 0 = 0.25 volts/amp IMON sensitivity
 1 = 0.50 volts/amp IMON sensitivity
 2 = Voltmeter operation, current = 1 amp
 3 = 0.50 volts/amp IMON sensitivity, percentage error
 4 = 0.50 volts/amp IMON sensitivity, readings rejected
 5 = Printer test
 6 = Illegal code
 7 = Illegal code

Note : The Memtec and Texas Instruments Silent 700 series of cassette readers make provision for 86 character blocks followed by two cyclic redundancy check characters. SIROTEM does not implement the cyclic redundancy check, and in order to be able to print SIROTEM data on 80 character-per-line printers, and also to conserve tape space, the full 88 character block is not used. This may mean that the 8 bit synchronisation character at the end of the block (see APPENDIX VI) will be read as an asterisk, and be transmitted by the cassette reader to appear at the beginning of the second, and each subsequent, printed line. Therefore, if data is being transferred by one of these cassette readers, it may be desirable to strip this asterisk from the transferred data.

The cassette unit in the SIROTEM itself does not use the synchronisation characters in the same way, and therefore data transferred via the RS232 port will not contain the extra asterisk.