



Exos E 5U84 JBOD

GEM 5 SES-3 Addenda

205135800-00-A

March 2023

© 2023 Seagate Technology LLC. All rights reserved.

Seagate, Seagate Technology, and the Spiral logo are registered trademarks of Seagate Technology LLC in the United States and/or other countries. Exos is either a trademark or registered trademark of Seagate Technology LLC or one of its affiliated companies in the United States and/or other countries. All other trademarks or registered trademarks are the property of their respective owners. When referring to drive capacity, one gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes. Your computer's operating system may use a different standard of measurement and report a lower capacity. In addition, some of the listed capacity is used for formatting and other functions, and thus will not be available for data storage. Actual data rates may vary depending on operating environment and other factors, such as chosen interface and disk capacity. Seagate reserves the right to change, without notice, product offerings or specifications.

Revision History

Revision	Date	Change Description
00-A	2023-03-30	Initial release

Table of Contents

1	Introduction.....	4
1.1	Scope	4
1.2	Terms and Abbreviations	4
1.3	Notation Conventions	5
1.4	References	5
2	Supported ANSI SES-3 Pages and Elements.....	6
3	Element to Device Mapping	7
3.1	Enclosure FRU Layout	7
3.1.1	Enclosure Front View	7
3.1.2	Enclosure Top View	7
3.1.3	Enclosure Rear View.....	8
3.2	SES Element Mapping	9
3.3	GEMNet Addresses.....	12
4	Diagnostic Page Layouts	13
4.1	Diagnostic Page 00h	13
4.2	SES Page 01h.....	13
4.3	SES Page 02h and Page 05h Layout	16
4.3.1	SES Page 05h Threshold Support.....	19
4.4	SES Page 07h Layout.....	20
4.4.1	Page 07h Descriptor Strings	24
4.5	SES Page 0Ah Layout.....	25
4.5.1	SES Page 0Ah Layout for SBB IOM A.....	25
4.5.2	SES Page 0Ah Layout for SBB IOM B.....	31
4.6	Vendor Unique Page 91h Layout	37
4.7	Vendor Unique Page 92h Layout	42
4.8	Vendor Unique Page 94h Layout	45

1 Introduction

1.1 Scope

This document is provided as an extension to the GEM 5 SES-3 Specification to detail exact SES page layouts and specification deviations implemented by the Exos E 5U84 12G SAS JBOD product. It is a guide to inform both customers and product testers of the intended SES page structure a product variant provides.

This document is not intended to cover all specifics of SES implementation for the Seagate storage enclosure platform. For details on element/descriptor formats and behavior, the GEM 5 SES-3 Specification [3] and ANSI T-10 SES Specification [1] should be referenced.

This document applies to the following enclosure product IDs.

- SP-3584-E12EBD

1.2 Terms and Abbreviations

ANSI	American National Standards Institute
CDB	Command Descriptor Block
CLI	Command Line Interface
EEPROM	Electrically Erasable Programmable Read-Only Memory
EIIOE	Element Index Includes Overall Element
EIP	Element Index Present
EM	Enclosure Management
ESI	Enclosure Services Interface Processor
ESP	Enclosure Services Process
FRU	Field Replaceable Unit
GEM	Generic Enclosure Management
IOM	I/O Module
LED	Light-Emitting Diode
LSB	Least Significant Bit
MSB	Most Significant Bit
NAA	Network Address Authority
PCM	Power Cooling Module
PSU	Power Supply Unit
RQST	Request
RSVD	Reserved
SAS	Serial Attached SCSI
SBB	Storage Bridge Bay
SBBMI	SBB Midplane Interconnect
SCSI	Small Computer System Interface
SEP	Storage Enclosure Processor
SES	SCSI Enclosure Services
SGPIO	Serial General Purpose I/O
TWI	Two Wire Interface
VPD	Vital Product Data

Application client	An object that is the source of SCSI commands.
Attached ESP	An ESP that is attached to another device server.
Critical condition	An enclosure condition established when one or more elements inside the enclosure have failed or are operating outside of their specification. The failure of the element makes continued normal operation of at least some elements in the enclosure impossible.

	Some elements within the enclosure may be able to continue normal operation.
Information condition	An enclosure condition that should be made known to the application client. The condition is not an error and does not reduce the capabilities of the devices in the enclosure.
Noncritical condition	An enclosure condition established when one or more elements inside the enclosure have failed or are operating outside of their specifications. The failure of the elements does not affect continued normal operation of the enclosure. All SCSI devices in the enclosure continue to operate according to their specifications. The ability of the devices to operate correctly if additional failures occur may be reduced by a noncritical condition.
Standalone ESP	An ESP that is also the device server.
Subenclosure	An enclosure accessed through a primary subenclosure's ESP.
Unrecoverable condition	An enclosure condition established when one or more elements inside the enclosure have failed and have disabled some functions of the enclosure. The enclosure may be incapable of recovering or bypassing the failure and requires repairs to correct the condition.

1.3 Notation Conventions

<value>h	Indicates a hexadecimal number, e.g., <i>23h</i>
<value>	A value without leading zeroes and no suffix indicates a decimal number, e.g., <i>34</i> .
[option0, option1]	Indicates possible options for this field.
[valueX..valueY]	Indicates options range from valueX to valueY.
[defaultX: valueX..valueY]	Indicates the default value "defaultX", with possible alternatives.
[XX]	Indicates variable values.

1.4 References

- [1] T10 SES-3r10
- [2] SCSI Primary Commands - 4 (SPC-4) Revision 36n
- [3] GEM 5 ANSI SES-3 Specification
- [4] GEM Command Line Interface Specification

2 Supported ANSI SES-3 Pages and Elements

Table 1 lists the ANSI SES pages and Vendor Unique SES pages supported by the enclosure. Table 2 lists the ANSI and Vendor Specific SES elements supported by the enclosure.

Table 1 - Supported SES Pages

Page Code	Description	Control/Status
ANSI SES Pages		
00h	Supported Diagnostics Pages Diagnostic Page	Status
01h	Configuration Diagnostic Page	Status
02h	Enclosure Diagnostic Page	Control and Status
03h	Help Text Diagnostic Page	Status
05h	Threshold Out Diagnostic Page	Control and Status
07h	Element Descriptor Diagnostic Page	Status
0Ah	Additional Element Status Diagnostic Page	Status
0Eh	Download Microcode Control Diagnostic Page	Control and Status
Vendor Specific Pages		
84h/85h	In-band CLI Control Page	Control and Status
90h	Customer VPD Control Page	Control and Status
91h	Statistics Page	Status
92h	Extended Status Page	Status
94h	Phy Management Diagnostic Page	Control and Status

Table 2 - Supported SES Elements

Element Code	Description	Element count
ANSI SES Elements		
17h	Array Device	84
02h	Power Supply	2
03h	Cooling Element	10
04h	Temperature Sensor	22
05h	Door Lock Sensor	2
06h	Audible Alarm	1
07h	Enclosure Services Controller Electronics	2
0Eh	Enclosure	1
12h	Voltage Sensor	4
13h	Current Sensor	4
18h	SAS Expander	10
19h	SAS Connector	18
Vendor Specific SES Elements		
86h	SBB Midplane Interconnect	2
88h	Enclosure Power	1
89h	Enclosure Electronics Power	2
8Ah	Enclosure Settings	1
8Bh	Enclosure Electronics Diagnostics	2

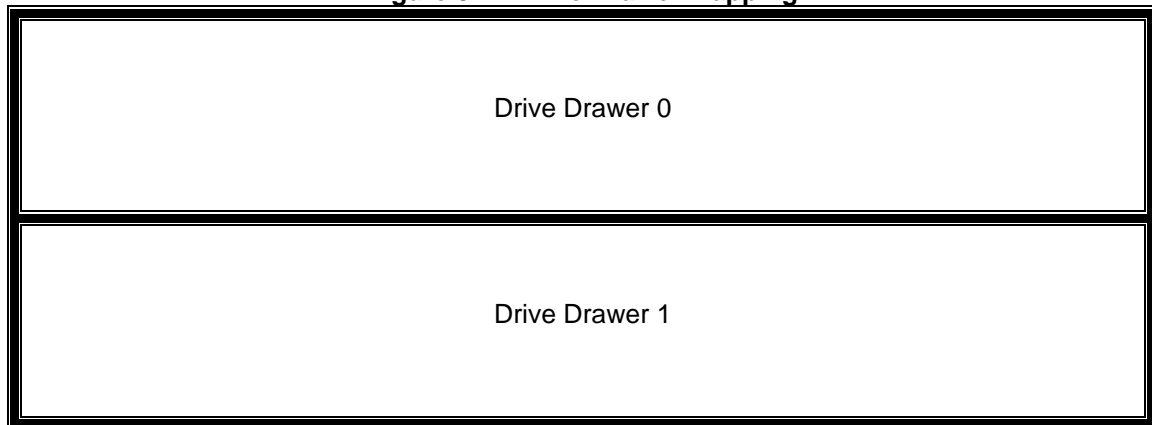
3 Element to Device Mapping

3.1 Enclosure FRU Layout

The layout of the enclosure with respect to physical FRU location is as follows.

3.1.1 Enclosure Front View

Figure 3.1 - Drive Drawer Mapping



3.1.2 Enclosure Top View

Figure 3.2 - Drive Bay numbering convention for drawer 0 (top drawer)

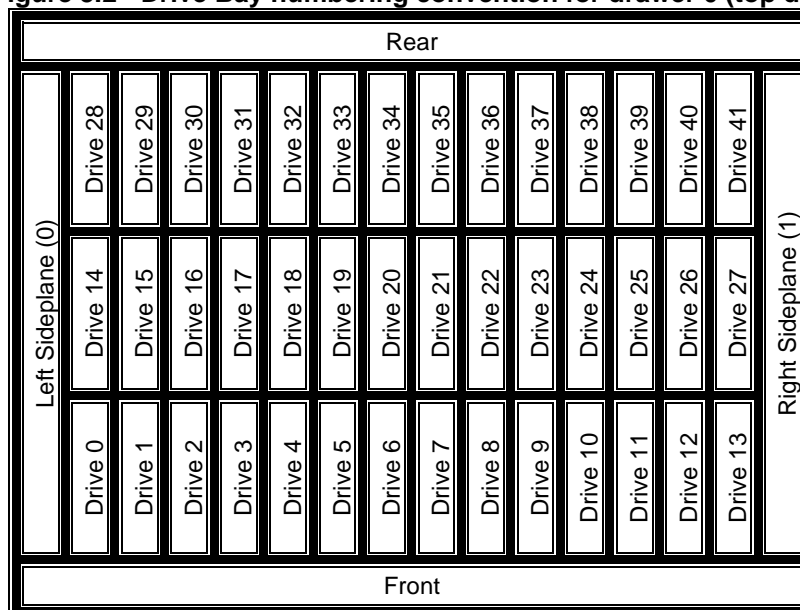
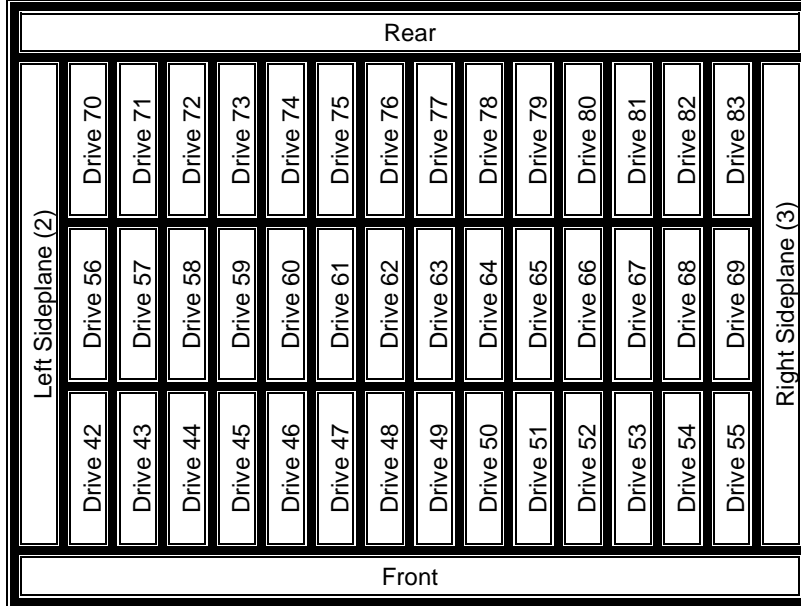
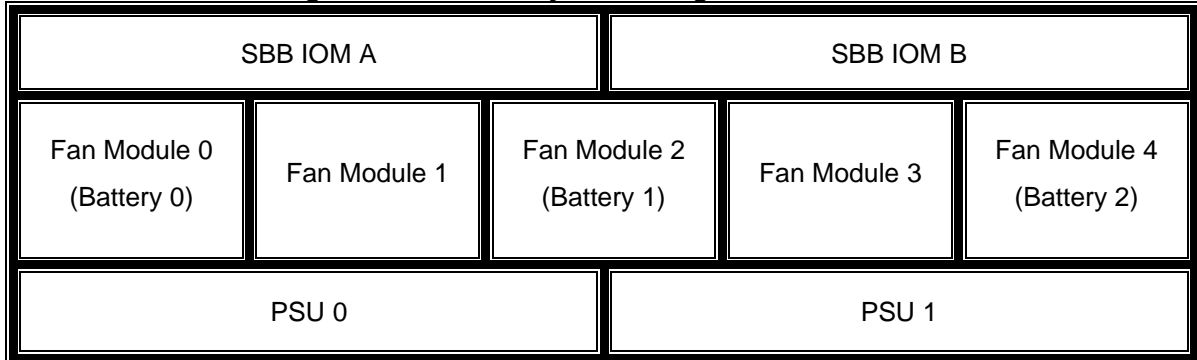


Figure 3.3 - Drive Bay numbering convention for drawer 1 (bottom drawer)



3.1.3 Enclosure Rear View

Figure 4 – Module Bay numbering convention



3.2 SES Element Mapping

For SES Pages 02h, 05h, 07h and 92h the element to physical device mapping is shown in Table 3.

Table 3 - SES Element Descriptions

Global Element Index	Relative Element Index	Description	Associated FRU
Array Device Elements			
0	0	Array Device element representing Disk Drive Bay 0	Drawer 0
...
41	41	Array Device element representing Disk Drive Bay 41	Drawer 0
42	42	Array Device element representing Disk Drive Bay 42	Drawer 1
...
83	83	Array Device element representing Disk Drive Bay 83	Drawer 1
Power Supply Elements			
84	0	Power Supply element representing PSU 0	PSU 0
85	1	Power Supply element representing PSU 1	PSU 1
Cooling Elements			
86	0	Cooling element representing Fan 0	Fan Module 0
87	1	Cooling element representing Fan 1	Fan Module 0
88	2	Cooling element representing Fan 2	Fan Module 1
89	3	Cooling element representing Fan 3	Fan Module 1
90	4	Cooling element representing Fan 4	Fan Module 2
91	5	Cooling element representing Fan 5	Fan Module 2
92	6	Cooling element representing Fan 6	Fan Module 3
93	7	Cooling element representing Fan 7	Fan Module 3
94	8	Cooling element representing Fan 8	Fan Module 4
95	9	Cooling element representing Fan 9	Fan Module 4
Temperature Sensor Elements			
96	0	Ambient Temperature Sensor 0	Sideplane 0
97	1	Ambient Temperature Sensor 2	Sideplane 2
98	2	Front-Right Baseplane Temperature Sensor	Drawer 0
99	3	Front-Right Baseplane Temperature Sensor	Drawer 1
100	4	Middle-Left Baseplane Temperature Sensor	Drawer 0
101	5	Middle -Left Baseplane Temperature Sensor	Drawer 1
102	6	Rear-Left Baseplane Temperature Sensor	Drawer 0
103	7	Rear-Left Baseplane Temperature Sensor	Drawer 1
104	8	Rear-Right Baseplane Temperature Sensor	Drawer 0
105	9	Rear-Right Baseplane Temperature Sensor	Drawer 1
106	10	24-port Expander Temperature Sensor	Sideplane 1
107	11	24-port Expander Temperature Sensor	Sideplane 3
108	12	24-port Expander Temperature Sensor	Sideplane 0
109	13	24-port Expander Temperature Sensor	Sideplane 2

Global Element Index	Relative Element Index	Description	Associated FRU
110	14	36-port Expander Temperature Sensor	Sideplane 0
111	15	36-port Expander Temperature Sensor	Sideplane 2
112	16	36-port Expander Temperature Sensor	Sideplane 1
113	17	36-port Expander Temperature Sensor	Sideplane 3
114	18	PSU Inlet Temperature Sensor	PSU 0
115	19	PSU Hotspot Temperature Sensor	PSU 0
116	20	PSU Inlet Temperature Sensor	PSU 1
117	21	PSU Hotspot Temperature Sensor	PSU 1
118	22	SBB IOM Inlet Temperature Sensor	SBB IOM A
119	23	SBB IOM Inlet Temperature Sensor	SBB IOM B
Door Lock Sensor Elements			
120	0	Drawer 0 Open Sensor	Drawer 0
121	1	Drawer 1 Open Sensor	Drawer 1
Audible Alarm Elements			
122	0	Ops Panel Buzzer State ¹	Enclosure
Enclosure Services Controller Electronics Elements			
123	0	Element associated with SEP device	SBB IOM A
124	1	Element associated with SEP device	SBB IOM B
Enclosure Elements			
125	0	Element representing the Enclosure	Enclosure
Voltage Sensor Elements			
126	0	+12V Rail Voltage Sensor	PSU 0
127	1	+5V Rail Voltage Sensor	PSU 0
128	2	+12V Rail Voltage Sensor	PSU 1
129	3	+5V Rail Voltage Sensor	PSU 1
Current Sensor Elements			
130	0	+12V Rail Current Sensor	PSU 0
131	1	+5V Rail Current Sensor	PSU 0
132	2	+12V Rail Current Sensor	PSU 1
133	3	+5V Rail Current Sensor	PSU 1
SAS Expander Elements			
134	0	36-port SAS Expander	Sideplane 0
135	1	24-port SAS Expander	Sideplane 0
136	2	36-port SAS Expander	Sideplane 1
137	3	24-port SAS Expander	Sideplane 1
138	4	36-port SAS Expander	Sideplane 2
139	5	24-port SAS Expander	Sideplane 2
140	6	36-port SAS Expander	Sideplane 3
141	7	24-port SAS Expander	Sideplane 3
142	8	SBB IOM SAS Expander	SBB IOM A
143	9	SBB IOM SAS Expander	SBB IOM B
SAS Connector Elements			
144	0	SAS Connector for IOM MiniSAS HD Port A	SBB IOM A

Global Element Index	Relative Element Index	Description	Associated FRU
145	1	SAS Connector for IOM MiniSAS HD Port B	SBB IOM A
146	2	SAS Connector for IOM MiniSAS HD Port C	SBB IOM A
147	3	SAS Connector for IOM MiniSAS HD Port A	SBB IOM B
148	4	SAS Connector for IOM MiniSAS HD Port B	SBB IOM B
149	5	SAS Connector for IOM MiniSAS HD Port C	SBB IOM B
150	6	SBB IOM A to Sideplane 1 36-port Expander SAS Connector A	SBB IOM A
151	7	SBB IOM A to Sideplane 1 36-port Expander SAS Connector B	SBB IOM A
152	8	SBB IOM A to Sideplane 1 24-port Expander SAS Connector A	SBB IOM A
153	9	SBB IOM A to Sideplane 3 24-port Expander SAS Connector A	SBB IOM A
154	10	SBB IOM A to Sideplane 3 36-port Expander SAS Connector A	SBB IOM A
155	11	SBB IOM A to Sideplane 3 36-port Expander SAS Connector B	SBB IOM A
156	12	SBB IOM B to Sideplane 0 24-port Expander SAS Connector A	SBB IOM B
157	13	SBB IOM B to Sideplane 0 36-port Expander SAS Connector B	SBB IOM B
158	14	SBB IOM B to Sideplane 0 36-port Expander SAS Connector A	SBB IOM B
159	15	SBB IOM B to Sideplane 2 36-port Expander SAS Connector A	SBB IOM B
160	16	SBB IOM B to Sideplane 2 36-port Expander SAS Connector B	SBB IOM B
161	17	SBB IOM B to Sideplane 2 24-port Expander SAS Connector A	SBB IOM B
SBB Midplane Interconnect Elements			
162	0	SBB IOM to Midplane Interconnect Electronics	SBB IOM A
163	1	SBB IOM to Midplane Interconnect Electronics	SBB IOM B
Enclosure Electronics Power Elements			
164	0	SBB IOM Power Status and Control	SBB IOM A
165	1	SBB IOM Power Status and Control	SBB IOM B
Enclosure Settings Elements			
166	0	Enclosure Ops Panel Settings	Enclosure
Enclosure Electronics Diagnostics Elements			
167	0	SEP Diagnostics status and Control	SBB IOM A
168	1	SEP Diagnostics status and Control	SBB IOM B
<p>¹The ops panel buzzer is a "no fit" option on the enclosure. In the case a buzzer is not fitted, the audible alarm element will still be represented.</p> <p>² Not available on all Power Supplies. If the sensor is not available on a specific power supply model, the SES Page 02h element status is set to NOT INSTALLED (05h).</p>			

3.3 GEMNet Addresses

The *gncli* command is used to issue GEM CLI commands to the Sideplane expanders (see [4] for details). To target a specific expander, this command uses either SES expander IDs or GEMNet addresses. Table 4 shows the GEMNet address/Expander ID to use to target a specific Sideplane expander.

Table 4 - gncli Expander Addresses

Expander	GEMNet Address	Expander Address
Sideplane 0 24-port Expander	3,0,0	<i>exp:1</i>
Sideplane 0 36-port Expander	3,0,1	<i>exp:0</i>
Sideplane 1 24-port Expander	3,0,2	<i>exp:3</i>
Sideplane 1 36-port Expander	3,0,3	<i>exp:2</i>
Sideplane 2 24-port Expander	3,1,0	<i>exp:5</i>
Sideplane 2 36-port Expander	3,1,1	<i>exp:4</i>
Sideplane 3 24-port Expander	3,1,2	<i>exp:7</i>
Sideplane 3 36-port Expander	3,1,3	<i>exp:6</i>

4 Diagnostic Page Layouts

4.1 Diagnostic Page 00h

Diagnostics Page 00h lists all SES pages supported by the SEP. The page 00h response reported by the documented product is shown in Table 5.

Table 5 - Diagnostic Page 00h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (00h)							
1	Reserved							
2	(MSB)	PAGE LENGTH (14)						(LSB)
3								
4	SUPPORTED PAGE LIST							
17	(00 01 02 03 05 07 0A 0E 84 85 90 91 92 94 h)							

4.2 SES Page 01h

SES Page 01h provides information on enclosure identification and element layout in SES pages 02h, 05h, 07h and 92h. Table 6 covers the layout of Page 01h for the enclosure documented within this addendum.

Table 6 - SES Page 01h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (01h)							
1	NUMBER OF SECONDARY SUBENCLOSURES (00h)							
2	(MSB)	PAGE LENGTH (267)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Enclosure Descriptor List ¹								
8	RSVD	RELATIVE ENCLOSURE SERVICES PROCESS ID (1h)			RSVD	NUMBER OF ENCLOSURE SERVICES PROCESSES (2h)		
9	SUBENCLOSURE IDENTIFIER (00h)							
10	NUMBER OF TYPE DESCRIPTOR HEADERS (11h)							
11	ENCLOSURE DESCRIPTOR LENGTH (3Ch)							
12	ENCLOSURE LOGICAL IDENTIFIER							
19	(Determined by Midplane VPD)							
20	ENCLOSURE VENDOR IDENTIFICATION ("SEAGATE ")							
27								

Bit Byte	7	6	5	4	3	2	1	0
28	PRODUCT IDENTIFICATION ("SP-3584-E12EBD ")							
43	PRODUCT IDENTIFICATION ("SP-3584-E12EBD ")							
44	PRODUCT REVISION LEVEL							
47	(Determined by GEM firmware version)							
48	ENCLOSURE SERIAL NUMBER							
62	(Determined by Midplane VPD)							
63	ENCLOSURE CONFIGURATION SETTINGS (00h)							
64	ENCLOSURE ID							
66	(Determined by value of enclosure shelf ID)							
67	Reserved							
70	Reserved							
71	ENCLOSURE OPTIONAL SETTINGS (02h)							
Type Descriptor Header List ²								
72	Array Device Descriptor (17 54 00 00 h)							
75	Array Device Descriptor (17 54 00 00 h)							
76	Power Supply Descriptor (02 02 00 00 h)							
79	Power Supply Descriptor (02 02 00 00 h)							
80	Cooling Descriptor (03 0A 00 00 h)							
83	Cooling Descriptor (03 0A 00 00 h)							
84	Temperature Sensor Descriptor (04 18 00 00 h)							
87	Temperature Sensor Descriptor (04 18 00 00 h)							
88	Door Lock Sensor Descriptor (05 02 00 00 h)							
91	Door Lock Sensor Descriptor (05 02 00 00 h)							
92	Audible Alarm Descriptor (06 01 00 00 h)							
95	Audible Alarm Descriptor (06 01 00 00 h)							
96	Enclosure Services Controller Electronics Descriptor (07 02 00 00 h)							
99	Enclosure Services Controller Electronics Descriptor (07 02 00 00 h)							
100	Enclosure Descriptor (0E 01 00 00 h)							
103	Enclosure Descriptor (0E 01 00 00 h)							
104	Voltage Sensor Descriptor (12 04 00 00 h)							
107	Voltage Sensor Descriptor (12 04 00 00 h)							
108	Current Sensor Descriptor (13 04 00 00 h)							
111	Current Sensor Descriptor (13 04 00 00 h)							
112	SAS Expander Descriptor (18 0A 00 00 h)							
115	SAS Expander Descriptor (18 0A 00 00 h)							
116	SAS Connector Descriptor (19 12 00 00 h)							
119	SAS Connector Descriptor (19 12 00 00 h)							
120	SBB Midplane Interconnect Descriptor (86 02 00 19 h)							

Bit Byte	7	6	5	4	3	2	1	0
123								
124								
127								
128								
131								
132								
135								
136								
139								
140								
143								
Type Descriptor Text List ³								
144								
168								
169								
183								
184								
210								
211								
228								
229								
261								
262								
270								
¹ See sections 6.2.1 – 6.2.3 in [3] for further details ² See section 6.2.4 in [3] for further details on the element descriptor format ³ See section 6.2.5 in [3] for further details								

4.3 SES Page 02h and Page 05h Layout

SES Page 02h and SES Page 05h both conform to the same overall page layout, with 4-byte elements listed in the same order as defined by SES Page 01h. As such, both page structures are defined in Table 7.

Table 7 - SES Page 02h and SES Page 05h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (02h/05h)							
1	SHORT STATUS ¹ (Page 02h) / Reserved (Page 05h)							
2	(MSB)	PAGE LENGTH (772)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Status Descriptor List ² (Page 02h) / Threshold Descriptor List ³ (Page 05h)								
8	Array Device Overall Element Descriptor							
11								
12	Array Device Element 0 Descriptor							
15								
...								
344	Array Device Element 83 Descriptor							
347								
348	Power Supply Overall Element Descriptor							
351								
352	Power Supply Element 0 Descriptor							
355								
356	Power Supply Element 1 Descriptor							
359								
360	Cooling Overall Element Descriptor							
363								
364	Cooling Element 0 Descriptor							
367								
...								
400	Cooling Element 9 Descriptor							
403								
404	Temperature Sensor Overall Element Descriptor							
407								
408	Temperature Sensor Element 0 Descriptor							
411								
...								

Bit Byte	7	6	5	4	3	2	1	0
500	Temperature Sensor Element 23 Descriptor							
503								
504	Door Lock Sensor Overall Element Descriptor							
507								
508	Door Lock Sensor Element 0 Descriptor							
511								
512	Door Lock Sensor Element 1 Descriptor							
515								
516	Audible Alarm Overall Element Descriptor							
519								
520	Audible Alarm Element 0 Descriptor							
523								
524	Enclosure Services Controller Electronics Overall Element Descriptor							
527								
528	Enclosure Services Controller Electronics Element 0 Descriptor							
531								
532	Enclosure Services Controller Electronics Element 1 Descriptor							
535								
536	Enclosure Overall Element Descriptor							
539								
540	Enclosure Element 0 Descriptor							
543								
544	Voltage Sensor Overall Element Descriptor							
547								
548	Voltage Sensor Element 0 Descriptor							
551								
	...							
560	Voltage Sensor Element 3 Descriptor							
563								
564	Current Sensor Overall Element Status Descriptor							
567								
568	Current Sensor Element 0 Descriptor							
571								
	...							
580	Current Sensor Element 3 Descriptor							
583								
584	SAS Expander Overall Element Descriptor							
587								

Bit Byte	7	6	5	4	3	2	1	0
588	SAS Expander Element 0 Descriptor							
591								
	...							
624	SAS Expander Element 9 Descriptor							
627								
628	SAS Connector Overall Element Descriptor							
631								
632	SAS Connector Element 0 Descriptor							
635								
	...							
700	SAS Connector Element 17 Descriptor							
703								
704	SBB Midplane Interconnect Overall Element Descriptor							
707								
708	SBB Midplane Interconnect Element 0 Descriptor							
711								
712	SBB Midplane Interconnect Element 1 Descriptor							
715								
716	Enclosure Power Overall Element Descriptor							
719								
720	Enclosure Power Element Descriptor							
723								
724	Enclosure Electronics Power Overall Element Descriptor							
727								
728	Enclosure Electronics Power Element 0 Descriptor							
731								
732	Enclosure Electronics Power Element 1 Descriptor							
735								
736	Enclosure Settings Overall Element Descriptor							
739								
740	Enclosure Settings Element 0 Descriptor							
743								
744	Enclosure Electronics Diagnostics Overall Element Descriptor							
747								
748	Enclosure Electronics Diagnostics Element 0 Descriptor							
751								
752	Enclosure Electronics Diagnostics Element 1 Descriptor							
755								

Bit Byte	7	6	5	4	3	2	1	0
756	Sideplane Overall Element Descriptor							
759								
760	Sideplane Element 0 Descriptor							
763								
	...							
772	Sideplane Element 3 Descriptor							
775								
¹ See section 6.3.2.1 in [3] for details on the SHORT STATUS format ² See section 7 of [3] for status descriptor format details for each element type ³ See [3] for threshold descriptor format details								

4.3.1 SES Page 05h Threshold Support

Not all SES element types support SES Page 05h threshold status or control descriptors. Where an element does not support a threshold descriptor, it shall set its status descriptor to all zeros, i.e., [00 00 00 00 h]. Table 8 shows which element types are expected to support a threshold.

Table 8 - Threshold Descriptor Support

Element Type	Threshold Descriptor Support
Array Device	No
Power Supply	No
Cooling Element	No
Temperature Sensor	Yes
Door Lock Sensor	No
Audible Alarm	No
Enclosure Services Controller Electronics	No
Enclosure	No
Voltage Sensor	No
Current Sensor	No
SAS Expander	No
SAS Connector	No
SBB Midplane Interconnect	No
Enclosure Power	No
Enclosure Electronics Power	No
Enclosure Settings	No
Enclosure Electronics Diagnostics	No
All Overall Elements	No

4.4 SES Page 07h Layout

Table 9 shows the page 07h layout implemented by the documented product.

GEM uses SES Page 07h to report version and serialization information for each of the enclosure FRUs. It may also provide supplemental information with regards to physical element location within the enclosure. Not all elements provide a descriptor string. Where this is the case, 00h will be reported for the descriptor length.

Please note the example below provides a typical representation of the page output. To allow for variation in output, it is recommended that any client should fully parse the page content and not rely on fixed offsets. For example, the temperature sensor element descriptors will only be reported if the associated FRU is present. The descriptor headers will always be present and report a non-zero value if there is data available to read and parse

Table 9 - SES Page 07h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (07h)							
1	Reserved							
2	(MSB)	PAGE LENGTH (5175)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Element Descriptor List								
8	Array Device Overall Element Descriptor							
11	(00 00 00 00 h)							
12	Array Device Element 0 Descriptor							
15	(00 00 00 00 h)							
...								
344	Array Device Element 283 Descriptor							
347	(00 00 00 00 h)							
348	Power Supply Overall Element Descriptor							
351	(00 00 00 00 h)							
352	Power Supply Element 0 Descriptor							
428	(00 00 00 49 h)							
429	73 bytes of descriptor data ¹							
429	Power Supply Element 1 Descriptor							
505	(00 00 00 49 h)							
506	73 bytes of descriptor data ¹							
506	Cooling Overall Element Descriptor							
509	(00 00 00 00 h)							
510	Cooling Element 0 Descriptor							
604	(00 00 00 5B h)							
604	91 bytes of descriptor data ¹							
...								
1365	Cooling Element 9 Descriptor							

Bit Byte	7	6	5	4	3	2	1	0
1459	(00 00 00 5B h) 91 bytes of descriptor data ¹							
1460	Temperature Sensor Overall Element Descriptor							
1463	(00 00 00 00 h)							
1464	Temperature Sensor Element 0 Descriptor							
1523	(00 00 00 38 h) 56 bytes of descriptor data ¹							
	...							
2844	Temperature Sensor Element 23 Descriptor							
2903	(00 00 00 38 h) 56 bytes of descriptor data ¹							
2904	Door Lock Sensor Overall Element Descriptor							
2907	(00 00 00 00 h)							
2908	Door Lock Sensor Element 0 Descriptor							
2911	(00 00 00 00 h)							
2912	Door Lock Sensor Element 1 Descriptor							
2915	(00 00 00 00 h)							
2916	Audible Alarm Overall Element Descriptor							
2919	(00 00 00 00 h)							
2920	Audible Alarm Element 0 Descriptor							
2923	(00 00 00 00 h)							
2924	Enclosure Services Controller Electronics Overall Element Descriptor							
2927	(00 00 00 00 h)							
2928	Enclosure Services Controller Electronics Element 0 Descriptor							
3055	(00 00 00 7C h) 124 bytes of descriptor data ¹							
3056	Enclosure Services Controller Electronics Element 1 Descriptor							
3183	(00 00 00 7C h) 124 bytes of descriptor data ¹							
3184	Enclosure Overall Element Descriptor							
3187	(00 00 00 00 h)							
3188	Enclosure Element 0 Descriptor							
3262	(00 00 00 47 h) 71 bytes of descriptor data ¹							
3263	Voltage Sensor Overall Element Descriptor							
3266	(00 00 00 00 h)							
3267	Voltage Sensor Element 0 Descriptor							
3326	(00 00 00 38 h) 56 bytes of descriptor data ¹							
	...							
3447	Voltage Sensor Element 3 Descriptor							
3506	(00 00 00 38 h) 56 bytes of descriptor data ¹							
3507	Current Sensor Overall Element Status Descriptor							
3510	(00 00 00 00 h)							

Bit Byte	7	6	5	4	3	2	1	0
3511	Current Sensor Element 0 Descriptor (00 00 00 38 h)							
3570	56 bytes of descriptor data ¹							
	...							
3691	Current Sensor Element 3 Descriptor (00 00 00 38 h)							
3750	56 bytes of descriptor data ¹							
3751	SAS Expander Overall Element Descriptor (00 00 00 00 h)							
3754								
3755	SAS Expander Element 0 Descriptor (00 00 00 70 h)							
3880	112 bytes of descriptor data ¹							
	...							
4567	SAS Expander Element 7 Descriptor (00 00 00 70 h)							
4682	112 bytes of descriptor data ¹							
4683	SAS Expander Element 8 Descriptor (00 00 00 00 h)							
4686								
4687	SAS Expander Element 9 Descriptor (00 00 00 00 h)							
4690								
4691	SAS Connector Overall Element Descriptor (00 00 00 00 h)							
4694								
4695	SAS Connector Element 0 Descriptor (00 00 00 14 h)							
4718	20 bytes of descriptor data ¹							
	...							
5103	SAS Connector Element 17 Descriptor (00 00 00 14 h)							
5126	20 bytes of descriptor data ¹							
5127	SBB Midplane Interconnect Overall Element Descriptor (00 00 00 00 h)							
5130								
5131	SBB Midplane Interconnect Element 0 Descriptor (00 00 00 00 h)							
5134								
5135	SBB Midplane Interconnect Element 1 Descriptor (00 00 00 00 h)							
5138								
5139	Enclosure Power Overall Element Descriptor (00 00 00 00 h)							
5142								
5143	Enclosure Power Element Descriptor (00 00 00 00 h)							
5146								
5147	Enclosure Electronics Power Overall Element Descriptor (00 00 00 00 h)							
5150								
5151	Enclosure Electronics Power Element 0 Descriptor (00 00 00 00 h)							
5154								
5155	Enclosure Electronics Power Element 1 Descriptor							

Bit Byte	7	6	5	4	3	2	1	0
5158	(00 00 00 00 h)							
5159	Enclosure Settings Overall Element Descriptor							
5162	(00 00 00 00 h)							
5163	Enclosure Settings Element 0 Descriptor							
5166	(00 00 00 00 h)							
5167	Enclosure Electronics Diagnostics Overall Element Descriptor							
5170	(00 00 00 00 h)							
5171	Enclosure Electronics Diagnostics Element 0 Descriptor							
5174	(00 00 00 00 h)							
5175	Enclosure Electronics Diagnostics Element 1 Descriptor							
5178	(00 00 00 00 h)							
¹ See section 4.4.1 for descriptor string format, Descriptor length varies as per element value in run time								

4.4.1 Page 07h Descriptor Strings

The descriptor string formats used by each element that supports them are shown in Table 10. Note that the string formats may be subject to change over time as new FRUs are supported by the enclosure or additional information becomes available. Refer to [3] for full details on descriptor string decoding.

Table 10 - FRU Descriptor string formats

Element Type	Descriptor String
Power Supply	<i>TP=XX;SN=XXXXXXXXXXXXXXXXXX;F1=XXXX;F2=XXXX;F3=XXXX;VR=XX;VC=XXXXXXXXXX;PN=XXXXXXXXXX;</i>
Cooling	<i>TP=XX;SN=XXXXXXXXXXXXXXXXXX;CF=XX;CC=XXXXXXXX;PN=XXXXXXXXXX;</i>
Temperature Sensor	<i>NM=XX;LO=XXXXXXXXXXXXXX;</i>
Enclosure Services Controller Electronics	<i>TP=XX;SN=XXXXXXXXXXXXXXXXXX;F1=XXXX;BL=XXXX;VR=XX;VC=XXXXXXXX;CR=XX;FR=XX;FC=XXXXXXXX;PN=XXXXXXXXXX;FF1=XXXXXXXX;PC=XXXXXXXX;</i>
Enclosure	<i>SN=XXXXXXXXXXXXXXXXXX;VR=XX;VC=XXXXXXXX;CR=XX;PN=XXXXXXXXXX;CM=XX;TP=XX;SN=XXXXXXXXXX;VR=XX;VC=XXXXXXXXXX;CR=XX;PN=XXXXXXXXXX</i>
Voltage Sensor	<i>NM=XX;LO=XXXXXXXXXXXXXX;</i>
Current Sensor	<i>NM=XX;LO=XXXXXXXXXXXXXX;</i>
SAS Expander	<i>BL=XXXX;FC=XXXXXXXXXX;VR=XX;VC=XXXXXXXXXX;CR=XX;PC=XXXXXXXXXX;F1=XXXX;FF1=XXXXXXXXXX;SN=XXXXXXXXXXXXXXXXXX;PN=XXXXXXXXXX;</i>
SAS Connector	<i>WN=XXXXXXXXXXXXXXXXXX;</i>

4.5 SES Page 0Ah Layout

By default, SES Page 0Ah only reports phy descriptor data for elements that belong to the directly queried IOM. As such the page layout differs when queried from IOM A or IOM B. Both page formats are shown in the sections below.

4.5.1 SES Page 0Ah Layout for SBB IOM A

Table 11 - SES Page 0Ah Layout for SBB IOM A

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (0Ah)							
1	Reserved							
2	(MSB)	PAGE LENGTH (3816)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Device Slot 0 Additional Status Descriptor								
8	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
9	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (34)							
10	Reserved							EIIOE (0)
11	ELEMENT INDEX (0)							
12	NUM OF DEVICE PHY DESCRIPTORS (1)							
13	DESC TYPE (0)	Reserved						NOT ALL PHYS (1)
14	Reserved							
15	DEVICE SLOT NUMBER (0)							
16	Phy Descriptor for Device 0 (SBB IOM A phy)							
43								
...								
Device Slot 83 Additional Status Descriptor								
2996	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
2997	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (34)							
2998	Reserved							EIIOE (0)
2999	ELEMENT INDEX (83)							
3000	NUM OF DEVICE PHY DESCRIPTORS (1)							
3001	DESC TYPE (0)	Reserved						NOT ALL PHYS (1)
3002	Reserved							
3003	DEVICE SLOT NUMBER (83)							
3004	Phy Descriptor for Device 83 (SBB IOM A phy)							
3031								

Bit Byte	7	6	5	4	3	2	1	0
Expander 0 Additional Status Descriptor								
3032	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3033	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3034	Reserved							EIIOE (0)
3035	ELEMENT INDEX (134)							
3036	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3037	DESC TYPE (1)		Reserved					
3038	Reserved							
3039								
3040	EXPANDER SAS ADDRESS							
3047								
3048	Phy Descriptor 0 for Expander 0 (Sideplane 0)							
3049								
	...							
3118	Phy Descriptor 35 for Expander 0 (Sideplane 0)							
3119								
Expander 1 Additional Status Descriptor								
3120	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3121	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (162)							
3122	Reserved							EIIOE (0)
3123	ELEMENT INDEX (135)							
3124	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3125	DESC TYPE (1)		Reserved					
3126	Reserved							
3127								
3128	EXPANDER SAS ADDRESS							
3135								
3136	Phy Descriptor 0 for Expander 1 (Sideplane 0)							
3137								
	...							
3182	Phy Descriptor 23 for Expander 1 (Sideplane 0)							
3183								
Expander 2 Additional Status Descriptor								
3184	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3185	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3186	Reserved							EIIOE (0)
3187	ELEMENT INDEX (136)							

Bit Byte	7	6	5	4	3	2	1	0
3188	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3189	DESC TYPE (1)		Reserved					
3190	Reserved							
3191	Reserved							
3192	EXPANDER SAS ADDRESS							
3199	EXPANDER SAS ADDRESS							
3200	Phy Descriptor 0 for Expander 2 (Sideplane 1)							
3201	Phy Descriptor 0 for Expander 2 (Sideplane 1)							
	...							
3270	Phy Descriptor 35 for Expander 2 (Sideplane 1)							
3271	Phy Descriptor 35 for Expander 2 (Sideplane 1)							
Expander 3 Additional Status Descriptor								
3272	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3273	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (62)							
3274	Reserved							EIIOE (0)
3275	ELEMENT INDEX (137)							
3276	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3277	DESC TYPE (1)		Reserved					
3278	Reserved							
3279	Reserved							
3280	EXPANDER SAS ADDRESS							
3287	EXPANDER SAS ADDRESS							
3288	Phy Descriptor 0 for Expander 3 (Sideplane 1)							
3289	Phy Descriptor 0 for Expander 3 (Sideplane 1)							
	...							
3334	Phy Descriptor 23 for Expander 3 (Sideplane 1)							
3335	Phy Descriptor 23 for Expander 3 (Sideplane 1)							
Expander 4 Additional Status Descriptor								
3336	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3337	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3338	Reserved							EIIOE (0)
3339	ELEMENT INDEX (138)							
3340	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3341	DESC TYPE (1)		Reserved					
3342	Reserved							
3343	Reserved							
3344	EXPANDER SAS ADDRESS							

Bit Byte	7	6	5	4	3	2	1	0
3351								
3352								
3353	Phy Descriptor 0 for Expander 4 (Sideplane 2)							
	...							
3422								
3423	Phy Descriptor 35 for Expander 4 (Sideplane 2)							
Expander 5 Additional Status Descriptor								
3424	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3425	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (62)							
3426	Reserved							EIIOE (0)
3427	ELEMENT INDEX (139)							
3428	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3429	DESC TYPE (1)	Reserved						
3430	Reserved							
3431	Reserved							
3432	EXPANDER SAS ADDRESS							
3439								
3440								
3441	Phy Descriptor 0 for Expander 5 (Sideplane 2)							
	...							
3486								
3487	Phy Descriptor 23 for Expander 5 (Sideplane 2)							
Expander 6 Additional Status Descriptor								
3488	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3489	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3490	Reserved							EIIOE (0)
3491	ELEMENT INDEX (140)							
3492	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3493	DESC TYPE (1)	Reserved						
3494	Reserved							
3495	Reserved							
2496	EXPANDER SAS ADDRESS							
3503								
3504								
3505	Phy Descriptor 0 for Expander 6 (Sideplane 3)							
	...							
3574	Phy Descriptor 35 for Expander 6 (Sideplane 3)							

Bit Byte	7	6	5	4	3	2	1	0
3575								
Expander 7 Additional Status Descriptor								
3576	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3577	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (62)							
3578	Reserved							EIIOE (0)
3579	ELEMENT INDEX (141)							
3580	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3581	DESC TYPE (1)		Reserved					
3582	Reserved							
3583	Reserved							
3584	EXPANDER SAS ADDRESS							
3591								
3592	Phy Descriptor 0 for Expander 7 (Sideplane 3)							
3593								
	...							
3638	Phy Descriptor 23 for Expander 7 (Sideplane 3)							
3639								
Expander 8 Additional Status Descriptor								
3640	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3641	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (88)							
3642	Reserved							EIIOE (0)
3643	ELEMENT INDEX (142)							
3644	NUM OF EXPANDER PHY DESCRIPTORS (37)							
3645	DESC TYPE (1)		Reserved					
3646	Reserved							
3647	Reserved							
3648	EXPANDER SAS ADDRESS							
3655								
3656	Phy Descriptor 0 for Expander 8 (SBB IOM A)							
3657								
	...							
3728	Phy Descriptor 36 for Expander 8 (SBB IOM A)							
3729								
Expander 9 Additional Status Descriptor								
3730	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3731	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (88)							
3732	Reserved							EIIOE (0)

Bit Byte	7	6	5	4	3	2	1	0
3733	ELEMENT INDEX (143)							
3734	NUM OF EXPANDER PHY DESCRIPTORS (37)							
3735	DESC TYPE (1)		Reserved					
3736	Reserved							
3737	Reserved							
3738	EXPANDER SAS ADDRESS							
3745	EXPANDER SAS ADDRESS							
3746	Phy Descriptor 0 for Expander 9 (SBB IOM B)							
3747	Phy Descriptor 0 for Expander 9 (SBB IOM B)							
	...							
3818	Phy Descriptor 36 for Expander 9 (SBB IOM B)							
3819	Phy Descriptor 36 for Expander 9 (SBB IOM B)							

4.5.2 SES Page 0Ah Layout for SBB IOM B

Table 12 - SES Page 0Ah Layout for SBB IOM B

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (0Ah)							
1	Reserved							
2	(MSB)	PAGE LENGTH (3816)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Device Slot 0 Additional Status Descriptor								
8	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
9	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (34)							
10	Reserved							EIIOE (0)
11	ELEMENT INDEX (0)							
12	NUM OF DEVICE PHY DESCRIPTORS (1)							
13	DESC TYPE (0)	Reserved						NOT ALL PHYS (1)
14	Reserved							
15	DEVICE SLOT NUMBER (0)							
16	Phy Descriptor for Device 0 (SBB IOM B phy)							
43								
...								
Device Slot 83 Additional Status Descriptor								
2996	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
2997	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (34)							
2998	Reserved							EIIOE (0)
2999	ELEMENT INDEX (83)							
3000	NUM OF DEVICE PHY DESCRIPTORS (1)							
3001	DESC TYPE (0)	Reserved						NOT ALL PHYS (1)
3002	Reserved							
3003	DEVICE SLOT NUMBER (83)							
3004	Phy Descriptor for Device 83 (SBB IOM B phy)							
3031								
Expander 0 Additional Status Descriptor								
3032	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3033	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3034	Reserved							EIIOE (0)
3035	ELEMENT INDEX (185)							

Bit Byte	7	6	5	4	3	2	1	0
3036	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3037	DESC TYPE (1)		Reserved					
3038	Reserved							
3039	Reserved							
3040	EXPANDER SAS ADDRESS							
3047	EXPANDER SAS ADDRESS							
3048	Phy Descriptor 0 for Expander 0 (Sideplane 0)							
3049	Phy Descriptor 0 for Expander 0 (Sideplane 0)							
	...							
3118	Phy Descriptor 35 for Expander 0 (Sideplane 0)							
3119	Phy Descriptor 35 for Expander 0 (Sideplane 0)							
Expander 1 Additional Status Descriptor								
3120	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3121	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (62)							
3122	Reserved							EIOE (0)
3123	ELEMENT INDEX (186)							
3124	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3125	DESC TYPE (1)		Reserved					
3126	Reserved							
3127	Reserved							
3128	EXPANDER SAS ADDRESS							
3135	EXPANDER SAS ADDRESS							
3136	Phy Descriptor 0 for Expander 1 (Sideplane 0)							
3137	Phy Descriptor 0 for Expander 1 (Sideplane 0)							
	...							
3182	Phy Descriptor 23 for Expander 1 (Sideplane 0)							
3183	Phy Descriptor 23 for Expander 1 (Sideplane 0)							
Expander 2 Additional Status Descriptor								
3184	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3185	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (14)							
3186	Reserved							EIOE (0)
3187	ELEMENT INDEX (187)							
3188	NUM OF EXPANDER PHY DESCRIPTORS (0)							
3189	DESC TYPE (1)		Reserved					
3190	Reserved							
3191	Reserved							
3192	EXPANDER SAS ADDRESS							

Bit Byte	7	6	5	4	3	2	1	0
3199								
3200	Phy Descriptor 0 for Expander 2 (Sideplane 1)							
3201								
	...							
3270	Phy Descriptor 35 for Expander 2 (Sideplane 1)							
3271								
Expander 3 Additional Status Descriptor								
3272	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3273	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (14)							
3274	Reserved							EIIOE (0)
3275	ELEMENT INDEX (188)							
3276	NUM OF EXPANDER PHY DESCRIPTORS (0)							
3277	DESC TYPE (1)	Reserved						
3278	Reserved							
3279								
3280	EXPANDER SAS ADDRESS							
3287								
3288	Phy Descriptor 0 for Expander 3 (Sideplane 1)							
3289								
	...							
3334	Phy Descriptor 23 for Expander 3 (Sideplane 1)							
3335								
Expander 4 Additional Status Descriptor								
3336	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3337	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (86)							
3338	Reserved							EIIOE (0)
3339	ELEMENT INDEX (189)							
3340	NUM OF EXPANDER PHY DESCRIPTORS (36)							
3341	DESC TYPE (1)	Reserved						
3342	Reserved							
3343								
3344	EXPANDER SAS ADDRESS							
3351								
3352	Phy Descriptor 0 for Expander 4 (Sideplane 2)							
3353								
	...							
3422	Phy Descriptor 35 for Expander 4 (Sideplane 2)							

Bit Byte	7	6	5	4	3	2	1	0
3423								
Expander 5 Additional Status Descriptor								
3424	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3425	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (62)							
3426	Reserved							EIIOE (0)
3427	ELEMENT INDEX (190)							
3428	NUM OF EXPANDER PHY DESCRIPTORS (24)							
3429	DESC TYPE (1)		Reserved					
3430	Reserved							
3431	Reserved							
3432	EXPANDER SAS ADDRESS							
3439	EXPANDER SAS ADDRESS							
3440	Phy Descriptor 0 for Expander 5 (Sideplane 2)							
3441	Phy Descriptor 0 for Expander 5 (Sideplane 2)							
	...							
3486	Phy Descriptor 23 for Expander 5 (Sideplane 2)							
3487	Phy Descriptor 23 for Expander 5 (Sideplane 2)							
Expander 6 Additional Status Descriptor								
3488	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3489	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (14)							
3490	Reserved							EIIOE (0)
3491	ELEMENT INDEX (191)							
3492	NUM OF EXPANDER PHY DESCRIPTORS (0)							
3493	DESC TYPE (1)		Reserved					
3494	Reserved							
3495	Reserved							
2496	EXPANDER SAS ADDRESS							
3503	EXPANDER SAS ADDRESS							
3504	Phy Descriptor 0 for Expander 6 (Sideplane 3)							
3505	Phy Descriptor 0 for Expander 6 (Sideplane 3)							
	...							
3574	Phy Descriptor 35 for Expander 6 (Sideplane 3)							
3575	Phy Descriptor 35 for Expander 6 (Sideplane 3)							
Expander 7 Additional Status Descriptor								
3576	INVALID	Reserved		EIP (1)	PROTOCOL IDENTIFIER (6)			
3577	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (14)							
3578	Reserved							EIIOE (0)

Bit Byte	7	6	5	4	3	2	1	0
3579	ELEMENT INDEX (192)							
3580	NUM OF EXPANDER PHY DESCRIPTORS (0)							
3581	DESC TYPE (1)		Reserved					
3582	Reserved							
3583	Reserved							
3584	EXPANDER SAS ADDRESS							
3591	EXPANDER SAS ADDRESS							
3592	Phy Descriptor 0 for Expander 7 (Sideplane 3)							
3593	Phy Descriptor 0 for Expander 7 (Sideplane 3)							
	...							
3638	Phy Descriptor 23 for Expander 7 (Sideplane 3)							
3639	Phy Descriptor 23 for Expander 7 (Sideplane 3)							
Expander 8 Additional Status Descriptor								
3640	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3641	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (14)							
3642	Reserved							EIIOE (0)
3643	ELEMENT INDEX (193)							
3644	NUM OF EXPANDER PHY DESCRIPTORS (0)							
3645	DESC TYPE (1)		Reserved					
3646	Reserved							
3647	Reserved							
3648	EXPANDER SAS ADDRESS							
3655	EXPANDER SAS ADDRESS							
3656	Phy Descriptor 0 for Expander 8 (SBB IOM B)							
3657	Phy Descriptor 0 for Expander 8 (SBB IOM B)							
	...							
3728	Phy Descriptor 36 for Expander 8 (SBB IOM B)							
3729	Phy Descriptor 36 for Expander 8 (SBB IOM B)							
Expander 9 Additional Status Descriptor								
3730	INVALID	Reserved	EIP (1)	PROTOCOL IDENTIFIER (6)				
3731	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (88)							
3732	Reserved							EIIOE (0)
3733	ELEMENT INDEX (194)							
3734	NUM OF EXPANDER PHY DESCRIPTORS (37)							
3735	DESC TYPE (1)		Reserved					
3736	Reserved							
3737	Reserved							

Bit Byte	7	6	5	4	3	2	1	0
3738	EXPANDER SAS ADDRESS							
3745	EXPANDER SAS ADDRESS							
3746	Phy Descriptor 0 for Expander 9 (SBB IOM A)							
3747	Phy Descriptor 0 for Expander 9 (SBB IOM A)							
	...							
3818	Phy Descriptor 36 for Expander 9 (SBB IOM A)							
3819	Phy Descriptor 36 for Expander 9 (SBB IOM A)							

4.6 Vendor Unique Page 91h Layout

Vendor unique Page 91h is used to report enclosure statistics counters. The layouts of the control and status pages are identical, however, the bit definitions within the descriptors vary (see [3] for details). Table 13 covers the basic layout of page 91h for the documented product.

Table 13 - SES Page 91h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (91h)							
1	Reserved							
2	(MSB)	PAGE LENGTH (8820)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Expander 0 Phy Statistics Descriptor								
8	ELEMENT TYPE CODE (18h)							
9	TYPE RELATIVE INDEX (0)							
10	DESCRIPTOR FORMAT REVISION (01h)							
11	NUMBER OF PHY STATISTICS DESCRIPTORS (36)							
12	PHY STATISTICS DESCRIPTOR LENGTH (28)							
13	(MSB)	EXPANDER CHANGE COUNT						(LSB)
14								
15	Reserved							
16								
43	Phy 0 Statistics Descriptor ¹							
...								
996	Phy 35 Statistics Descriptor ¹							
1023								
Expander 1 Phy Statistics Descriptor								
1024	ELEMENT TYPE CODE (18h)							
1025	TYPE RELATIVE INDEX (1)							
1026	DESCRIPTOR FORMAT REVISION (01h)							
1027	NUMBER OF PHY STATISTICS DESCRIPTORS (24)							
1028	PHY STATISTICS DESCRIPTOR LENGTH (28)							
1029	(MSB)	EXPANDER CHANGE COUNT						(LSB)
1030								
1031	Reserved							
1032								
1059	Phy 0 Statistics Descriptor ¹							
...								

Bit Byte	7	6	5	4	3	2	1	0
1676	Phy 23 Statistics Descriptor ¹							
1703								
	Expander 2 Phy Statistics Descriptor							
1704	ELEMENT TYPE CODE (18h)							
1705	TYPE RELATIVE INDEX (2)							
1706	DESCRIPTOR FORMAT REVISION (01h)							
1707	NUMBER OF PHY STATISTICS DESCRIPTORS (36)							
1708	PHY STATISTICS DESCRIPTOR LENGTH (28)							
1709	(MSB)	EXPANDER CHANGE COUNT						(LSB)
1710								
1711	Reserved							
1712	Phy 0 Statistics Descriptor ¹							
3739	...							
2692	Phy 35 Statistics Descriptor ¹							
2719	...							
	Expander 3 Phy Statistics Descriptor							
2720	ELEMENT TYPE CODE (18h)							
2721	TYPE RELATIVE INDEX (3)							
2722	DESCRIPTOR FORMAT REVISION (01h)							
2723	NUMBER OF PHY STATISTICS DESCRIPTORS (24)							
2724	PHY STATISTICS DESCRIPTOR LENGTH (28)							
2725	(MSB)	EXPANDER CHANGE COUNT						(LSB)
2726								
2727	Reserved							
2728	Phy 0 Statistics Descriptor ¹							
2756	...							
3372	Phy 23 Statistics Descriptor ¹							
3399	...							
	Expander 4 Phy Statistics Descriptor							
3400	ELEMENT TYPE CODE (18h)							
3401	TYPE RELATIVE INDEX (4)							
3402	DESCRIPTOR FORMAT REVISION (01h)							
3403	NUMBER OF PHY STATISTICS DESCRIPTORS (36)							
3404	PHY STATISTICS DESCRIPTOR LENGTH (28)							
3405	(MSB)	EXPANDER CHANGE COUNT						

Bit Byte	7	6	5	4	3	2	1	0	
3406	(LSB)								
3407	Reserved								
3408	Phy 0 Statistics Descriptor ¹								
3435	...								
3388	Phy 35 Statistics Descriptor ¹								
4415	Expander 5 Phy Statistics Descriptor								
4416	ELEMENT TYPE CODE (18h)								
4417	TYPE RELATIVE INDEX (5)								
4418	DESCRIPTOR FORMAT REVISION (01h)								
4419	NUMBER OF PHY STATISTICS DESCRIPTORS (24)								
4420	PHY STATISTICS DESCRIPTOR LENGTH (28)								
4421	(MSB)	EXPANDER CHANGE COUNT							
4422									(LSB)
4423	Reserved								
4424	Phy 0 Statistics Descriptor ¹								
4451	...								
5068	Phy 23 Statistics Descriptor ¹								
5095	Expander 6 Phy Statistics Descriptor								
5096	ELEMENT TYPE CODE (18h)								
5097	TYPE RELATIVE INDEX (6)								
5098	DESCRIPTOR FORMAT REVISION (01h)								
5099	NUMBER OF PHY STATISTICS DESCRIPTORS (36)								
6000	PHY STATISTICS DESCRIPTOR LENGTH (28)								
6001	(MSB)	EXPANDER CHANGE COUNT							
6002									(LSB)
6003	Reserved								
6004	Phy 0 Statistics Descriptor ¹								
6031	...								
6084	Phy 35 Statistics Descriptor ¹								
6111	Expander 7 Phy Statistics Descriptor								
6112	ELEMENT TYPE CODE (18h)								

Bit Byte	7	6	5	4	3	2	1	0	
6113	TYPE RELATIVE INDEX (7)								
6114	DESCRIPTOR FORMAT REVISION (01h)								
6115	NUMBER OF PHY STATISTICS DESCRIPTORS (24)								
6116	PHY STATISTICS DESCRIPTOR LENGTH (28)								
6117	(MSB)	EXPANDER CHANGE COUNT							
6118								(LSB)	
6119	Reserved								
6120	Phy 0 Statistics Descriptor ¹								
6147	...								
6764	Phy 23 Statistics Descriptor ¹								
6791	Expander 8 Phy Statistics Descriptor								
6792	ELEMENT TYPE CODE (18h)								
6793	TYPE RELATIVE INDEX (8)								
6794	DESCRIPTOR FORMAT REVISION (01h)								
6795	NUMBER OF PHY STATISTICS DESCRIPTORS (36)								
6796	PHY STATISTICS DESCRIPTOR LENGTH (28)								
6797	(MSB)	EXPANDER CHANGE COUNT							
6798								(LSB)	
6799	Reserved								
6800	Phy 0 Statistics Descriptor ¹								
6827	...								
7780	Phy 35 Statistics Descriptor ¹								
7807	Expander 9 Phy Statistics Descriptor								
7808	ELEMENT TYPE CODE (18h)								
7809	TYPE RELATIVE INDEX (9)								
7810	DESCRIPTOR FORMAT REVISION (01h)								
7811	NUMBER OF PHY STATISTICS DESCRIPTORS (36)								
7812	PHY STATISTICS DESCRIPTOR LENGTH (28)								
7813	(MSB)	EXPANDER CHANGE COUNT							
7814								(LSB)	
7815	Reserved								
7816	Phy 0 Statistics Descriptor ¹								
7843									

Bit Byte	7	6	5	4	3	2	1	0
	...							
8747	Phy 35 Statistics Descriptor ¹							
8823								
¹ See [3] for full details on the format of the Phy Statistics status/control descriptor								

4.7 Vendor Unique Page 92h Layout

Vendor unique Page 92h extends the status that can be represented in page 02h for each element. The page structure itself resembles that of page 07h with descriptor headers used to advertise the size of additional status data available for each element. Not all elements provide page 92h descriptors and where this is the case the descriptor length will be set to 0.

As with Page 07h, the example Page 92h output provided below is subject to change based on FRUs and cables that may or may not be present at the time of capture. The descriptor header will indicate if there is any data to be read.

Table 14 - SES Page 92h Layout

Bit Byte	7	6	5	4	3	2	1	0
0	PAGE CODE (92h)							
1	Reserved							
2	(MSB)	PAGE LENGTH (3839)						(LSB)
3								
4	(MSB)	GENERATION CODE						(LSB)
7								
Extended Status Descriptor List								
8	Array Device Overall Element Descriptor							
11	(00 00 00 00 h)							
12	Array Device Element 0 Descriptor							
15	(00 00 00 00 h)							
...								
344	Array Device Element 83 Descriptor							
347	(00 00 00 00 h)							
348	Power Supply Overall Element Descriptor							
358	(03 00 00 07 05 00 00 08 c1 00 03 h) 11 bytes of Descriptor data ¹							
359	Power Supply Element 0 Descriptor							
366	(01 00 00 04 00 00 00 00 h) 8 bytes of Descriptor data ¹							
367	Power Supply Element 1 Descriptor							
374	(01 00 00 04 00 00 00 00 h) 8 bytes of Descriptor data ¹							
375	Cooling Overall Element Descriptor							
378	(00 00 00 00 h)							
379	Cooling Element 0 Descriptor							
382	(00 00 00 00 h)							
...								
415	Cooling Element 9 Descriptor							
418	(00 00 00 00 h)							
419	Temperature Sensor Overall Element Descriptor							
422	(00 00 00 00 h)							

Bit Byte	7	6	5	4	3	2	1	0
423	Temperature Sensor Element 0 Descriptor							
426	(00 00 00 00 h)							
	...							
515	Temperature Sensor Element 23 Descriptor							
518	(00 00 00 00 h)							
519	Door Lock Sensor Overall Element Descriptor							
522	(00 00 00 00 h)							
523	Door Lock Sensor Element 0 Descriptor							
526	(00 00 00 00 h)							
527	Door Lock Sensor Element 1 Descriptor							
530	(00 00 00 00 h)							
531	Audible Alarm Overall Element Descriptor							
534	(00 00 00 00 h)							
535	Audible Alarm Element 0 Descriptor							
538	(00 00 00 00 h)							
539	Enclosure Services Controller Electronics Overall Element Descriptor							
542	(00 00 00 00 h)							
543	Enclosure Services Controller Electronics Element 0 Descriptor							
546	(00 00 00 00 h)							
547	Enclosure Services Controller Electronics Element 1 Descriptor							
550	(00 00 00 00 h)							
551	Enclosure Overall Element Descriptor							
554	(00 00 00 00 h)							
555	Enclosure Element 0 Descriptor							
558	(00 00 00 00 h)							
559	Voltage Sensor Overall Element Descriptor							
562	(00 00 00 00 h)							
563	Voltage Sensor Element 0 Descriptor							
566	(00 00 00 00 h)							
	...							
575	Voltage Sensor Element 3 Descriptor							
578	(00 00 00 00 h)							
579	Current Sensor Overall Element Status Descriptor							
582	(00 00 00 00 h)							
583	Current Sensor Element 0 Descriptor							
586	(00 00 00 00 h)							
	...							
595	Current Sensor Element 35 Descriptor							

Bit Byte	7	6	5	4	3	2	1	0
598	(00 00 00 00 h)							
592	SAS Expander Overall Element Descriptor							
602	(00 00 00 00 h)							
603	SAS Expander Element 0 Descriptor							
606	(00 00 00 00 h)							
	...							
639	SAS Expander Element 9 Descriptor							
642	(00 00 00 00 h)							
643	SAS Connector Overall Element Descriptor							
646	(00 00 00 00 h)							
647	SAS Connector Element 0 Descriptor							
1162	(01 00 02 00 ... h)							
	516 bytes of descriptor data ¹							
	...							
3227	SAS Connector Element 5 Descriptor							
3742	(01 00 02 00 ... h)							
	516 bytes of descriptor data ¹							
3743	SAS Connector Element 6 Descriptor							
3746	(00 00 00 00 h)							
	...							
3777	SAS Connector Element 17 Descriptor							
3790	(00 00 00 00 h)							
3791	SBB Midplane Interconnect Overall Element Descriptor							
3794	(00 00 00 00 h)							
3795	SBB Midplane Interconnect Element 0 Descriptor							
3798	(00 00 00 00 h)							
3799	SBB Midplane Interconnect Element 1 Descriptor							
3802	(00 00 00 00 h)							
3803	Enclosure Power Overall Element Descriptor							
3806	(00 00 00 00 h)							
3807	Enclosure Power Element 0 Descriptor							
3810	(00 00 00 00 h)							
3811	Enclosure Electronics Power Overall Element Descriptor							
3814	(00 00 00 00 h)							
3815	Enclosure Electronics Power Element 0 Descriptor							
3818	(00 00 00 00 h)							
3819	Enclosure Electronics Power Element 1 Descriptor							
3822	(00 00 00 00 h)							
3823	Enclosure Settings Overall Element Descriptor							
3826	(00 00 00 00 h)							

Bit Byte	7	6	5	4	3	2	1	0
3827	Enclosure Settings Element 0 Descriptor (00 00 00 00 h)							
3830								
3831	Enclosure Electronics Diagnostics Overall Element Descriptor (00 00 00 00 h)							
3834								
3835	Enclosure Electronics Diagnostics Element 0 Descriptor (00 00 00 00 h)							
3838								
3839	Enclosure Electronics Diagnostics Element 1 Descriptor (00 00 00 00 h)							
3842								
¹ See [3] for extended status descriptor format for SAS connectors								

4.8 Vendor Unique Page 94h Layout

Vendor unique Page 94h is used to report enclosure phy status and perform phy management control. The layouts of the control and status pages are identical, however, the bit definitions within the descriptors vary (see [3] for details). Table 15 covers the basic layout of page 94h for the documented product.

Table 15 - SES Page 94h Layout

Bit Byte	7	6	5	4	3	2	1	0	
0	PAGE CODE (94h)								
1	Reserved								
2	(MSB)	PAGE LENGTH (3828)						(LSB)	
3									
4	(MSB)	GENERATION CODE						(LSB)	
7									
SAS Expander 0 Phy Manager Descriptor									
8	ELEMENT TYPE CODE (18h)								
9	TYPE RELATIVE INDEX (0)								
10	DESCRIPTOR FORMAT REVISION (01h)								
11	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)								
12	PHY MANAGEMENT DESCRIPTOR LENGTH (12)								
13	Reserved-Status/RQST ENB -Control								
14	Reserved								
15									
16	Phy 0 Management Descriptor ¹								
27									
...									

Bit Byte	7	6	5	4	3	2	1	0
436	Phy 35 Management Descriptor ¹							
447								
SAS Expander 1 Phy Manager Descriptor								
448	ELEMENT TYPE CODE (18h)							
449	TYPE RELATIVE INDEX (1)							
450	DESCRIPTOR FORMAT REVISION (01h)							
451	NUMBER OF PHY MANAGEMENT DESCRIPTORS (24)							
452	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
453	Reserved-Status/RQST ENB -Control							
454	Reserved							
455								
456	Phy 0 Management Descriptor ¹							
467								
...								
732	Phy 23 Management Descriptor ¹							
743								
SAS Expander 2 Phy Manager Descriptor								
744	ELEMENT TYPE CODE (18h)							
745	TYPE RELATIVE INDEX (2)							
746	DESCRIPTOR FORMAT REVISION (01h)							
747	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)							
748	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
749	Reserved-Status/RQST ENB -Control							
750	Reserved							
751								
752	Phy 0 Management Descriptor ¹							
763								
...								
1172	Phy 35 Management Descriptor ¹							
1183								
SAS Expander 3 Phy Manager Descriptor								
1184	ELEMENT TYPE CODE (18h)							
1185	TYPE RELATIVE INDEX (3)							
1186	DESCRIPTOR FORMAT REVISION (01h)							
1187	NUMBER OF PHY MANAGEMENT DESCRIPTORS (24)							
1188	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
1189	Reserved-Status/RQST ENB -Control							

Bit Byte	7	6	5	4	3	2	1	0
1190	Reserved							
1191	Reserved							
1192	Phy 0 Management Descriptor ¹							
1203	...							
1468	Phy 23 Management Descriptor ¹							
1479	...							
SAS Expander 4 Phy Manager Descriptor								
1480	ELEMENT TYPE CODE (18h)							
1481	TYPE RELATIVE INDEX (4)							
1482	DESCRIPTOR FORMAT REVISION (01h)							
1483	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)							
1484	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
1485	Reserved-Status/RQST ENB -Control							
1486	Reserved							
1487	Reserved							
1488	Phy 0 Management Descriptor ¹							
1499	...							
1908	Phy 35 Management Descriptor ¹							
1919	...							
SAS Expander 5 Phy Manager Descriptor								
1920	ELEMENT TYPE CODE (18h)							
1921	TYPE RELATIVE INDEX (5)							
1922	DESCRIPTOR FORMAT REVISION (01h)							
1923	NUMBER OF PHY MANAGEMENT DESCRIPTORS (24)							
1924	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
1925	Reserved-Status/RQST ENB -Control							
1926	Reserved							
1927	Reserved							
1928	Phy 0 Management Descriptor ¹							
1939	...							
2204	Phy 23 Management Descriptor ¹							
2215	...							
SAS Expander 6 Phy Manager Descriptor								
2216	ELEMENT TYPE CODE (18h)							

Bit Byte	7	6	5	4	3	2	1	0
2217	TYPE RELATIVE INDEX (6)							
2218	DESCRIPTOR FORMAT REVISION (01h)							
2219	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)							
2220	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
2221	Reserved-Status/RQST ENB -Control							
2222	Reserved							
2223	Reserved							
2224	Phy 0 Management Descriptor ¹							
2235	Phy 0 Management Descriptor ¹							
	...							
2644	Phy 35 Management Descriptor ¹							
2655	Phy 35 Management Descriptor ¹							
	SAS Expander 7 Phy Manager Descriptor							
2656	ELEMENT TYPE CODE (18h)							
2657	TYPE RELATIVE INDEX (7)							
2658	DESCRIPTOR FORMAT REVISION (01h)							
2659	NUMBER OF PHY MANAGEMENT DESCRIPTORS (24)							
2660	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
2661	Reserved-Status/RQST ENB -Control							
2662	Reserved							
2663	Reserved							
2664	Phy 0 Management Descriptor ¹							
2675	Phy 0 Management Descriptor ¹							
	...							
2940	Phy 23 Management Descriptor ¹							
2951	Phy 23 Management Descriptor ¹							
	SAS Expander 8 Phy Manager Descriptor							
2952	ELEMENT TYPE CODE (18h)							
2953	TYPE RELATIVE INDEX (8)							
2954	DESCRIPTOR FORMAT REVISION (01h)							
2955	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)							
2956	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
2957	Reserved-Status/RQST ENB -Control							
2958	Reserved							
2959	Reserved							
2960	Phy 0 Management Descriptor ¹							
2971	Phy 0 Management Descriptor ¹							

Bit Byte	7	6	5	4	3	2	1	0
	...							
3380	Phy 35 Management Descriptor ¹							
3391	SAS Expander 9 Phy Manager Descriptor							
3392	ELEMENT TYPE CODE (18h)							
3393	TYPE RELATIVE INDEX (9)							
3394	DESCRIPTOR FORMAT REVISION (01h)							
3395	NUMBER OF PHY MANAGEMENT DESCRIPTORS (36)							
3396	PHY MANAGEMENT DESCRIPTOR LENGTH (12)							
3397	Reserved-Status/RQST ENB -Control							
3398	Reserved							
3399	Reserved							
3400	Phy 0 Management Descriptor ¹							
3411	...							
3820	Phy 35 Management Descriptor ¹							
3831	Phy 35 Management Descriptor ¹							
¹ See [3] for full details on the format of the Phy Management status/control descriptor								