

**Proposed
Draft**

**Serial ATA
International Organization**

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1 Introduction

1.1 Problem Statement

After ratification of TPR056r13 Enable new Power Disable feature on standard SATA connector P3 the following errors were discovered.

Table 5 footnotes f changed the wording “P1 and P2 tied together” but did not redline this change. After review by the Digital team tied was changed back to connected. The change also applies to footnote g. Footnotes f and g apply to P1 and P2 but were placed next to P3.

In the enable/disable Device Sleep section it was discovered since Device Sleep is not allowed to be supported if POWER DISABLE ALWAYS ENABLED bit is set to one the list reduces to a single entry.

In the POWER DISABLE FEATURE ALWAYS ENABLED bit section the incorrect IDENTIFY DEVICE data word was referenced as a copy of the field.

In the POWER DISABLE FEATURE ENABLED bit section the incorrect IDENTIFY DEVICE data word was referenced as a copy of the field.

Observed omission of host attempting to enable Power Disable but Device Sleep is already enabled.

1.2 Solution Summary

Change Table 5 footnotes f and g back to connected instead of tied. Footnotes f and g apply to P1 and P2 therefore they were moved accordingly.

In the enable/disable Device Sleep section deleted list item b and removed list format.

Correcte the IDENTIFY DEVICE data word reference in both the POWER DISABLE FEATURE ALWAYS ENABLED bit section and the POWER DISABLE FEATURE ENABLED bit section.

Added the condition that Device Sleep is already enabled and a host attempts to enable Power Disable.

1.3 Background (optional)

2 Technical Specification Changes

2.1 <Title of section being changed>

[editor note: Existing text is black. New text is marked as underlined in blue color. Material to be deleted ~~is red with strikethrough markings.~~]

Table 5 – Standard SATA connector (3.5 inch & 2.5 inch HDD)

	Name	Type	Description	Cable Usage ^{b c}	Backplane Usage ^c
Signal Segment Key					
Signal Segment	S1	GND	Ground	1 st Mate	2 nd Mate
	S2	A+	Differential Signal Pair A	2 nd Mate	3 rd Mate
	S3	A-		2 nd Mate	3 rd Mate
	S4	GND	Ground	1 st Mate	2 nd Mate
	S5	B-	Differential Signal Pair B	2 nd Mate	3 rd Mate
	S6	B+		2 nd Mate	3 rd Mate
	S7	GND	Ground	1 st Mate	2 nd Mate
Signal Segment "L"					
Central Connector Gap ^d					
Power Segment "L"					
Power Segment	P1	Retired ^{e t.g}		2 nd Mate	3 rd Mate
	P2	Retired ^{e t.g}		2 nd Mate	3 rd Mate
	P3	DEVSLP ^{e f} / PWDIS ^{e g}	Enter/Exit DevSleep / Enter/Exit PowerDisable	1 st Mate	2 nd Mate
	P4	GND	Ground	1 st Mate	1 st Mate
	P5	GND	Ground	1 st Mate	2 nd Mate
	P6	GND	Ground	1 st Mate	2 nd Mate
	P7	V ₅	5 V Power, Pre-charge	1 st Mate	2 nd Mate
	P8	V ₅	5 V Power	2 nd Mate	3 rd Mate
	P9	V ₅	5 V Power	2 nd Mate	3 rd Mate
	P10	GND	Ground	1 st Mate	2 nd Mate
	P11	DAS/DSS/DHU	Device Activity Signal / Disable Staggered Spinup/ Direct Head Unload / Vendor Specific ^a	2 nd Mate	3 rd Mate
	P12	GND	Ground	1 st Mate	1 st Mate
	P13	V ₁₂	12 V Power, Pre-charge	1 st Mate	2 nd Mate
	P14	V ₁₂	12 V Power	2 nd Mate	3 rd Mate
	P15	V ₁₂	12 V Power	2 nd Mate	3 rd Mate
Power Segment Key					
^a For specific optional usage of pin P11 (see 6.13). ^b Although the mate order is shown, hot plugging is not supported if using the cable connector receptacle. ^c All mate sequences assume zero angular offset between connectors. ^d The signal segment and power segment may be separate. ^e Previous versions of this specification assigned 3.3 V to pins P1, P2, and P3. In addition, device plug pins P1, P2, and P3 were required to be bused together. ^f If using DEVSLP, it is recommended to have P1 and P2 connected together for the purpose of legacy functionality. ^g If using PWDIS, it is recommended to have P1 and P2 connected together for the purpose of legacy functionality.					

2.1.1 <13.3.10> Enable/disable Device Sleep feature

A Count(7:0) value of 09h is used by the host to enable or disable Device Sleep. If the value in Features(7:0) is set to 10h, then the device shall set IDENTIFY DEVICE data Word 79, bit 8, to one. If the value in Features (7:0) is set to 90h, then the device shall clear IDENTIFY DEVICE data Word 79, bit 8, to zero. As a result of processing a power on reset, the Device Sleep feature shall be disabled.

If:

- a) the host attempts to enable or disable the Device Sleep feature; and
- b) the Device Sleep feature is not supported (i.e., IDENTIFY DEVICE data Word 78 bit 8 is cleared to zero),

then the device shall return command aborted.

If the host attempts to enable Device Sleep and the Power Disable feature is:

- ~~a) enabled (i.e., IDENTIFY DEVICE data Word 79 bit 10 is set to one); or~~
- ~~b) always enabled (i.e., IDENTIFY DEVICE data Word 77 bit 8 is set to one);~~

then the device shall return command aborted.

[The host should ensure the Power Disable feature is disenabled before enabling the Device Sleep feature.](#)

2.1.2 <13.3.12> Enable/Disable Power Disable fFeature

A Count(7:0) value of 0Bh is used by the host to enable or disable the Power Disable feature (see 8.6).

If the POWER DISABLE FEATURE SUPPORTED bit (see 13.7.9.2.27) is cleared to zero, then the device shall return command aborted.

If the host specified that the Power Disable feature is to be:

- a) enabled and the Device Sleep feature is enabled; or
- b) disabled and the POWER DISABLE FEATURE ALWAYS ENABLED bit (see 13.7.9.2.28) is set to one,

then the device shall return command aborted.

If the host specified that the Power Disable feature is to be:

- a) disabled and the POWER DISABLE FEATURE ENABLED bit (see 13.7.9.3.14) is cleared to zero;
- b) enabled and the POWER DISABLE FEATURE ENABLED bit is set to one; or
- c) enabled and the POWER DISABLE FEATURE ALWAYS ENABLED bit is set to one,

then the device shall return command completion with no error.

If the host specified that the Power Disable feature is to be enabled and the POWER DISABLE FEATURE ENABLED bit is cleared to zero, then the device shall:

- 1) enable the Power Disable feature;
- 2) set the POWER DISABLE FEATURE ENABLED bit to one; and
- 3) return command completion with no error.

[The host should ensure the Device Sleep feature is disenabled before enabling the Power Disable feature.](#)

2.1.2.1.1 <13.7.9.2.28> POWER DISABLE FEATURE ALWAYS ENABLED bit

IDENTIFY DEVICE data Word ~~77~~79 bit ~~8~~10 is a copy of this field.

2.1.2.1.2 <13.7.9.3.14> POWER DISABLE FEATURE ENABLED bit

If the POWER DISABLE FEATURE ENABLED bit is set to one, then the Power Disable feature is enabled (see 8.6).

If the POWER DISABLE FEATURE ENABLED bit is cleared to zero, then the Power Disable feature is disabled.

If the POWER DISABLE FEATURE ALWAYS ENABLED bit is cleared to zero, after processing:

- a) a power-on reset, the value of the POWER DISABLE FEATURE ENABLED bit shall be cleared to zero;
- b) a hardware reset, the value of the POWER DISABLE FEATURE ENABLED bit shall not be changed; and
- c) a software reset, the value of the POWER DISABLE FEATURE ENABLED bit shall not be changed.

If the host attempts to enable the Power Disable feature and the Device Sleep feature is enabled (i.e., IDENTIFY DEVICE data Word 79 bit 8 is set to one), then the device shall return command aborted.

IDENTIFY DEVICE data Word ~~79~~77 bit ~~10~~8 is a copy of this field.