

**Proposed
Draft**

**Serial ATA
International Organization**

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**ECN069v1SATA31Hardware_Feature_Control_
Bug
Title : Hardware Feature Control Bug**

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Document History

Version	Date	Comments
0	03/28/2013	Initial release.
01	04/02/2013	Member review
02	05/03/2013	Ratified

1 Introduction

1.1 Problem Statement

The Supported Hardware Feature Control Identifier (Word) in the Identifier Device Data log is used to indicate what Hardware Control Feature is supported. In the specification, it is described as both a fixed and a variable value.

It is described as a fixed value here:

Byte	O/M	F/V	
00h..27h			As defined in the ATA8-ACS standard
28h..29h	O	V	Current Hardware Feature Control Identifier (Word)
2Ah..2Bh	O	F	Supported Hardware Feature Control Identifier (Word)
2Ch..1FFh			Reserved

O Support of the word is optional.
M Support of the word is mandatory.
F The content of the field is fixed and does not change. The DCO command may change the value of a fixed field.
V The contents of the field are variable and may change depending on the state of the device or the commands processed by the device.

It is described as a variable value here:

- d) on processing a power on reset, then:
- A. IDENTIFY DEVICE data word 79 bit 5 (see 13.2.1.19) shall be cleared to zero;
 - B. the Current Hardware Feature Control Identifier in the Identify Device Data log shall be cleared to zero; and
 - C. the Supported Hardware Feature Control Identifier in the Identify Device Data log shall be cleared to zero; and

If the Supported Hardware Feature Control Identifier is a variable value, specification conflicts arise where a SET FEATURES command to enable Hardware Feature Control would always abort. For example, assume a drive has a Supported Hardware Feature Control Identifier of F000h. After a power on reset, the Supported Hardware Feature Control Identifier is currently supposed to be cleared to zero. If a SET FEATURES is then issued to enable Hardware Feature Control with a Identifier of F000h, the command is supposed to be aborted by the below statement.

The device shall return command aborted if:

- a) IDENTIFY DEVICE data word 78 bit 5 is cleared to zero;
- b) the value in LBA(15:0) is not equal to the Supported Hardware Feature Control Identifier (see 13.7.7.1.2); or
- c) the Current Hardware Feature Control Identifier (see 13.7.7.1.1) is non-zero.

2 Proposed Changes

[Editor's Note: Existed text is black. New text is marked as underlined in blue color. Material to be deleted is ~~red with strikethrough markings~~.]

<13.10> Hardware Feature Control (optional)

In Serial ATA Revision 3.0 and previous specifications, Hardware Feature Control is defined only for these uses:

- a) Disable Staggered Spin-up (i.e., DSS) (see 6.9.1.1 and 13.11); and
- b) Activity indication LED (i.e., Device Activity Signal - DAS) (see 6.9.1.1 and 13.15).

Table 96 specifies the pins used by Hardware Feature Control for various connectors

Table 96 – Pins used by Hardware Feature Control

Standard Connector (3.5" <u>inch</u> & 2.5" <u>inch</u>)	1.8" <u>inch</u> Micro SATA Connector ^{4a}	LIF-SATA Connector
Pin P11: <ul style="list-style-type: none"> • <u>a</u>) DSS_i • <u>b</u>) DAS_i • <u>c</u>) DHU_i <u>or</u> • <u>d</u>) (other vendor specific)_i 	Pin P7: <ul style="list-style-type: none"> • <u>a</u>) DAS_i (added after SATA 3.0) • <u>b</u>) DHU_i <u>or</u> • <u>c</u>) (other vendor specific)_i 	Pin P8: <ul style="list-style-type: none"> • <u>a</u>) DSS_i • <u>b</u>) DAS_i <u>or</u> • <u>c</u>) (other vendor specific)_i Pin P21: <ul style="list-style-type: none"> • <u>a</u>) DHU_i
^{4a} DSS is not defined for 1.8" <u>inch</u> Micro SATA Connector.		

If Hardware Feature Control is supported, then:

- a) IDENTIFY DEVICE data ~~w~~Word 78 bit 5 (see 13.2.1.18) shall be set to one;
- b) the SET FEATURES Select Hardware Feature Control subcommand shall be supported (see 13.3.8);
- c) page 08h of the Identify Device Data log (see 13.7.7) shall be supported;
- d) on processing a power on reset, then:
 - A) IDENTIFY DEVICE data ~~w~~Word 79 bit 5 (see 13.2.1.19) shall be cleared to zero;
 - B) the Current Hardware Feature Control Identifier in the Identify Device Data log shall be cleared to zero; and
 - ~~C) the Supported Hardware Feature Control Identifier in the Identify Device Data log shall be cleared to zero; and~~
 - D) See 6.9 for requirements of the ~~h~~Hardware ~~f~~Feature ~~e~~Control pin(s);and
- e) after processing a SET FEATURES Enable Hardware Feature Control subcommand with no error, then:
 - A) IDENTIFY DEVICE data ~~w~~Word 79 bit 5 (see 13.2.1.19) shall be set to one;
 - B) the Current Hardware Feature Control Identifier in the Identify Device Data log shall be non-zero;
 - C) the Supported Hardware Feature Control Identifier in the Identify Device Data log shall be non-zero; and
 - D) the behavior of the Hardware Feature Control is specified by the SET FEATURE Enable Hardware Feature Control subcommand.