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**Technical Report:  
DRQ =0 When ERR=1 Feature and Allocation Identify  
Device Words**

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**Technical Report:**  
**DRQ=0 When ERR=1 Feature and Allocation Identify Device Words**

Secretariat  
**Information Technology Industry Council**

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**American National Standards Institute, Inc.**

**Abstract**

The purpose of the DRQ =0 When ERR=1 feature set is to allow a host to indicate to a device that the DRQ status bit is to be zero when ever the error bit is set to 1.

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## Foreword

This technical report describes the DRQ=0 When ERR=1 Feature and Allocation of Identify Device Words.

This technical report was developed by T13 during 2005. The approval process started in 2005. This document is not an American National Standard and the material contained herein is not normative in nature. Comments on the content of this document should be sent to the NCITS Secretariat, Information Technology Industry Council, 1250 Eye Street, NW (Suite 200), Washington, DC 20005.

( This technical report was processed and approved for submittal to ANSI by Accredited Standards Committee on Information Processing Systems, NCITS. Committee approval of the technical report does not necessarily imply that all committee members voted for approval. At the time it approved this technical report, the NCITS Committee had the following members: )

Dan Colgrove, Chairman  
Jim Hatfield, Vice-Chairman  
Mark Overby, Secretary

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Technical Committee T13 on ATA Interfaces, that reviewed this standard, had the following members:

Technical Committee T13 on ATA Interfaces, that developed this standard, had the following additional participants:

## Introduction

This technical report encompasses the following:

Clause 1 describes the scope.

Clause 2 provides normative references for the entire technical report.

Clause 3 provides definitions, abbreviations, and conventions used within the entire standard.

Clause 4 provides a description of the feature set.

Clause 5 describes the DRQ=0 When ERR=1 Feature and Allocation Identify Device Words.

# National Committee for Information Technology Standards (NCITS) Technical Report —

## DRQ=0 When ERR=1 Feature and Allocation Identify Device Words

### 1 Scope

#### 1.1 Assumptions

This feature set is optional for devices not implementing the PACKET Command feature set and prohibited for devices implementing the PACKET Command feature set.

### 2 Normative references

The following standards contain provisions that, through reference in the text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below.

Copies of the following documents can be obtained from ANSI: Approved ANSI standards, approved and draft international and regional standards (ISO, IEC, CEN/CENELEC, ITUT), and approved and draft foreign standards (including BSI, JIS, and DIN). For further information, contact ANSI Customer Service Department at 212-642-4900 (phone), 212-302-1286 (fax), or via the World Wide Web at <http://www.ansi.org>.

Additional availability contact information is provided below as needed.

AT Attachment with Packet Interface Extension (ATA/ATAPI-7), [ANSI INCITS.xxx-2004]

#### 2.1.1 Approved references

None.

#### 2.1.2 References under development

None.

#### 2.1.3 Other references

None.

### 3 Definitions, abbreviations, and conventions

#### 3.1 Definitions and abbreviations

For the purposes of this technical report, the following definitions apply:

#### 3.2 Conventions

##### 3.2.1 Conventions are defined elsewhere

See ATA/ATAPI-7 for conventions to be used.

### 4 Description of the Feature Set

Under this proposal a new Set Features function will enable a host to indicate to a device that the DRQ status bit is to be zero whenever the error bit is set to 1. This proposal also sets aside a supported bit and an enabled bit in new Identify Device words allocated for feature support/enabled reporting.

#### 4.1 DRQ=0 when ERR=1 Function

During the processing of a command devices set either BSY=1 or DRQ=1. DRQ=1 indicates that the device is requesting data. DRQ may be asserted when an error has occurred (ERR=1). This behavior is a legacy of buffer management where parallel ATA devices would transfer data to their buffer and set DRQ before detecting the error. The recommended Serial ATA protocol is to disallow the DRQ=1 and ERR=1 condition (Design Guide 21). If this feature is implemented on a Serial ATA drive the drive is guaranteed to do the recommended behavior.

This feature allows the host to require a device to clear DRQ to zero when ERR is set to one, so the error data does not have to be transferred to complete the command.

#### 4.2 Set Feature

**Table 1 - SET FEATURES register definitions**

Value (See note)	
5Fh	Enable DRQ bit shall be zero when ERR bit is one.
DFh	Disable DRQ bit shall be zero when ERR bit is one.

##### 4.2.1 Enable/disable DRQ=0 when ERR=1

Subcommand codes 5Fh and DFh enable and disable the clearing of the DRQ Status Register bit to zero when the ERR bit is set to one.

For parallel ATA devices at power-on, or after a hardware reset, the feature shall be disabled. The feature setting shall be preserved over software reset.

For Serial ATA devices if this feature is supported it shall be enabled at all times. Set features codes 5Fh and DFh shall be accepted by the device without changing the behavior of the device.

### 5 Identify Words 119-120,

This proposal reserves words 119-120 for expansion of the feature implemented/enabled words.

## 5.1 Bits for DRQ=0 When ERR=1 Feature

**Table 2 - IDENTIFY DEVICE information**

Word	O/M	F/V	Description
86		F	15 Words 119-120 are valid
119		F	15-1 Reserved
		F	0 1 = Clearing DRQ bit to be always zero when ERR bit is set to one is supported
120		F	15-1 Reserved
		V	0 1= Clearing DRQ bit to be always zero when ERR bit is set to one is enabled 0= Clearing DRQ bit to be always zero when ERR bit is set to one is disabled

Add to word 86:

If bit 15 of word 86 is set to 1 words 119-120 are valid

### 5.1.1 Word (119) Features/command sets supported

Word (119) shall indicate features/command sets supported. If a defined bit is cleared to zero, the indicated features/command set is not supported.

If bit 0 of word 119 is set to one, the optional DRQ=0 when ERR=1 feature is supported.

### 5.1.2 Word (120) Features/command sets enabled

Word (120) shall indicate features/command sets supported. If a defined bit is cleared to zero, the indicated features/command set is not enabled.

If bit 0 of word 120 is set to one, the DRQ=0 when ERR=1 feature is enabled.