Proposal to Support Generic Functionality

~~This~~ Generic Functionality is a proposal that allows an ATA device manufacturer~~s~~ to provide generic functionality using a fixed set of command codes. The functionality of the command codes is determined by a GUID stored in Identify Device.

1 IDENTIFY DEVICE

Assign IDENTIFY DEVICE words 104-111 to generic functionality Global Unique Identifier (GUID)

8.14.xx Words 104-111 Generic Functionality Global Unique Identifier
This field contains a 128-bit value identifying the generic functionality supported by the device. The generic function vendor shall ensure that the GUID value is unique. If the device does NOT support Generic Functionality then this field is set to zero.

2 New Commands

These commands all have the same documentation. They are taken from RETIRED command codes 71h-78h. The following section documents command code 71h. The same documentation applies to 72h, 73h, 74h, 75h, 76h, 77h, 78h

2.1.1 Generic Function 1

2.1.1.1 Command code

71h

2.1.1.2 Feature set

None

2.1.1.3 Protocol

This command shall follow one of the protocols defined in chapter 9, the specific protocol is determined by IDENTIFY DEVICE words 104-111

2.1.1.4 Inputs

Register	7	6	5	4	3	2	1	0
Features	Determined by IDENTIFY DEVICE words 104-111							
Sector Count	Determined by IDENTIFY DEVICE words 104-111							
Sector Number	Determined by IDENTIFY DEVICE words 104-111							
Cylinder Low	Determined by IDENTIFY DEVICE words 104-111							
Cylinder High	Determined by IDENTIFY DEVICE words 104-111							
Device/Head	obs	spc	obs	DEV	spc	spc	spc	spc
Command	71h							

Device/Head register -

DEV shall indicate the selected device.
Spc bits are determined by IDENTIFY DEVICE words 104-111

2.1.1.5 Normal outputs

Register	7	6	5	4	3	2	1	0
Error	Determined by IDENTIFY DEVICE words 104-111							
Sector Count	Determined by IDENTIFY DEVICE words 104-111							
Sector Number	Determined by IDENTIFY DEVICE words 104-111							
Cylinder Low	Determined by IDENTIFY DEVICE words 104-111							
Cylinder High	Determined by IDENTIFY DEVICE words 104-111							
Device/Head	obs	spc	obs	DEV	spc	spc	spc	spc
Status	BSY	DRDY	DF	spc	DRQ	spc	spc	ERR

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.
DRDY shall be set to one.
DF (Device Fault) shall be cleared to zero.
DRQ shall be cleared to zero.
ERR shall be cleared to zero.
Spc bits are determined by IDENTIFY DEVICE words 104-111

2.1.1.6 Error outputs

The device shall return command aborted if the command is not supported.

Register	7	6	5	4	3	2	1	0
Error	Spc	Spc	Spc	Spc	Spc	ABRT	Spc	spc
Sector Count	Determined by IDENTIFY DEVICE words 104-111							
Sector Number	Determined by IDENTIFY DEVICE words 104-111							
Cylinder Low	Determined by IDENTIFY DEVICE words 104-111							
Cylinder High	Determined by IDENTIFY DEVICE words 104-111							
Device/Head	obs	Spc	obs	DEV	Spc	Spc	Spc	Spc
Status	BSY	DRDY	DF	Spc	DRQ	Spc	Spc	ERR

Error register -

ABRT shall be set to one if this command is not supported. ABRT may be set to one if the device is not able to complete the action requested by the command.

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.
DRDY shall be set to one.
DF (Device Fault) shall be set to one if a device fault has occurred.
DRQ shall be cleared to zero.
ERR shall be set to one if an Error register bit is set to one.
Spc bits are determined by IDENTIFY DEVICE words 104-111

2.1.1.7 Prerequisites

None

2.1.1.8 Description

The functionality of this command is determined by IDENTIFY DEVICE words 104-111.

3 New Set Features

This SET FEATURES is used for disabling the Generic Function. Table 32 (Set Features Register definitions) Needs to be modified to add function 32h “Disable Generic Function Capability”.

3.1 Disable Generic Function Capability

When this command is issued, subsequent IDENTIFY DEVICE commands shall return zero in words 104-111, and Generic Functions 1-8 shall return command not supported errors. The disabled state does not persist over a power cycle but does persist over hardware or software reset.

4 Device Configuration Overlay

Generic functionality can be disabled and restored via DEVICE CONFIGURATION OVERLAY (DCO) commands. The following changes are required for DCO.

4.1 DCO Identify Data Structure

Modify word 7 bit 9 “1=Generic Functions Supported”

Add to 8.7.3.8.5 “Word 7 bit 9 if set to 1 indicates that the device supports IDENTIFY DEVICE words 104-111 and a minimum of one of the GENERIC FUNCTIONS.

4.2 DCO Set Data Structure

Modify word 7 bit 9 “1=Generic Functions Supported”

Add to 8.7.4.8.5 “Word 7 bit 9 is cleared to 0 to disable support for Generic Functionality and has the effect of setting IDENTIFY DEVICE words 104-111 to zero.