

BS EN 61291-6-1:2008



BSI Standards Publication

Optical amplifiers —

Part 6-1: Interfaces – Command set

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This British Standard is the UK implementation of EN 61291-6-1:2008. It is identical to IEC 61291-6-1:2008.

The UK participation in its preparation was entrusted by Technical Committee GEL/86, Fibre optics, to Subcommittee GEL/86/3, Fibre optic systems and active devices.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English version

**Optical amplifiers -
Part 6-1: Interfaces -
Command set
(IEC 61291-6-1:2008)**

Amplificateurs optiques -
Partie 6-1: Interfaces -
Répertoire des commandes
(CEI 61291-6-1:2008)

Lichtwellenleiter-Verstärker -
Teil 6-1: Schnittstellen -
Befehlssatz
(IEC 61291-6-1:2008)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 86C/803/CDV, future edition 1 of IEC 61291-6-1, prepared by SC 86C, Fibre optic systems and active devices, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61291-6-1 on 2008-09-01.

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- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61291-6-1:2008 was approved by CENELEC as a European Standard without any modification.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO/IEC 8859-1	- ¹⁾	Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No.1	-	-

¹⁾ Undated reference.

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INTRODUCTION

Optical amplifiers are being developed and commercially deployed with an increasing degree of sophistication and functionality. Often, information is sent to the optical amplifier, or requested from it, in order to determine signal conditions, operating parameters, and to adjust the operational aspects of the optical amplifier. Currently, no International Standard exists in this area, yet the need for a common set of command statements to/from optical amplifiers has emerged.

This part of IEC 61291 proposes a set of command strings useful in controlling optical amplifiers. It is based on an existing set of commands widely used across the industry today. The standardization of this command set will result in broader market use of advanced designs of optical amplifiers, typically controlled by microprocessors. These advanced amplifier designs are needed for next generation optical networks, requiring adaptive provisioning of optical paths and intelligent configuration/reconfiguration for provision of telecommunications services in a dynamic environment.

This standard addresses the structure and content of the command set to control optical amplifiers. It does not cover the physical or hardware interface which is assumed to exist for communication of this command set to the optical amplifier. The specification of a physical interface will be the subject of a separate standard yet to be developed.

With the rapidly evolving technology, it is envisioned that this standard will be amended with additional commands and functionality as technology evolves, and will be updated on a periodic basis, incorporating all previous amendments and additions.

OPTICAL AMPLIFIERS –

Part 6-1: Interfaces – Command set

1 Scope

This part of IEC 61291 describes the optical amplifier command set (OACS) for use in communicating with and controlling intelligent optical amplifiers. These amplifiers can receive and possibly respond to such commands by using resident firmware or may be optical amplifiers controlled by a microprocessor.

This standard addresses the structure and content of the command set to control optical amplifiers. It does not cover the physical or hardware interface, which is assumed to exist for communication of this command set to the optical amplifier. The specification of a physical interface will be the subject of a separate Part to be developed in the IEC 61291-6 series.

The command set described in this standard is intended to enable a user or host to retrieve the amplifier module's status and/or adjust its settings.

This standard lists all of the commands currently defined and supported within the OACS framework. The commands described cover a wide range of applications, and not all commands will be applicable to every amplifier. To determine the supported commands on an OACS compliant amplifier, please refer to the product specification supplied by the manufacturer.

All OACS compliant amplifiers support the full set of “universal” OACS commands. Other commands, usually specific to a design or implementation, may support some or all of the “optional” commands.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 8859-1: *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

3 Abbreviations

The following abbreviations are used in this standard:

ASCII	American standard character for information interchange
DC	dispersion compensator
EDFA	erbium doped fibre amplifier
OACS	optical amplifier command set
TEC	thermo-electric cooler
VOA	variable optical attenuator

4 General rules and concepts

4.1 Command set encoding language

All data sent to/from the module are encoded in 8-bit ASCII characters. Refer to ISO/IEC 8859-1.

4.2 Module initiated commands

The optical amplifier never sends an unsolicited response. Asynchronous notifications may be made, for example, by raising the appropriate “alarm” output hardware signal. However, the module may be configurable to send a prompt on power-on reset. This initial prompt may be preceded by one or more start-up messages.

4.3 Command set syntax structure

Commands consist of a command string, zero or more arguments, and end with a terminator. Command strings are case-insensitive. All commands have the following format:

COMMAND <argument_1> <argument_2> <argument_3><CR><LF>

4.4 Command arguments

Arguments may be strings of letters, integers or floating-point numbers. Floating-point numbers shall be entered in fixed notation (e.g. 0.023 not 2.3e-2).

Command strings and arguments shall be separated by one or more separator characters. Separators shall be 8-bit ASCII space characters.

4.5 Command set terminators

The command terminator is <CR><LF>. In the case of <CR><LF>, the command is executed on receipt of the <CR> character and the <LF> character is ignored.

A successful command execution may be responded to with an “OK<CR><LF>”. Unacknowledged commands may be responded to with a “??<CR><LF>”.

Command response consists of an optional response or error message. Error messages always start with the “?” character and normal responses do not. If a command completes normally and has no useful information to report, its response will be empty (no characters). Contents of error messages are not specified within this standard. The following are examples of some of the types of errors that are possible (this list is not all-inclusive):

?Unknown command 'REBOOT'
?Argument 'x' invalid
?Argument '5' out of range [1,4]
?Not implemented
??

4.6 Module response prompt

All responses are followed by a prompt, which indicates that the module is ready to process another command. The default prompt is <CR><LF> “>”.