



SLOVENSKI STANDARD
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Dynamic modules - Test methods - Part 5-1: Dynamic gain tilt equalizer - Response time measurement (IEC 62343-5-1:2009)

Dynamische Module - Prüfverfahren - Teil 5-1: Equalizer zur Kompensation einer dynamischen Verstärkerkennlinie - Messung der Antwortzeit (IEC 62343-5-1:2009)

Modules dynamiques - Méthodes d'essais - Partie 5-1: Egaliseur dynamique de basculement de gain - Mesure du temps de réponse (CEI 62343-5-1:2009)

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English version

**Dynamic modules -
Test methods -
Part 5-1: Dynamic gain tilt equalizer -
Response time measurement
(IEC 62343-5-1:2009)**

Modules dynamiques -
Méthodes d'essais -
Partie 5-1 : Egaliseur dynamique
de basculement de gain -
Mesure du temps de réponse
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Messung der Antwortzeit
(IEC 62343-5-1:2009)

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SIST EN 62343-5-1:2009

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 86C/883/FDIS, future edition 1 of IEC 62343-5-1, 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 62343-5-1 on 2009-08-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-05-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-08-01

Endorsement notice

The text of the International Standard IEC 62343-5-1:2009 was approved by CENELEC as a European Standard without any modification.

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INTERNATIONAL STANDARD

Dynamic modules – Test methods –
Part 5-1: Dynamic gain tilt equalizer – Response time measurement

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DYNAMIC MODULES –
TEST METHODS –**
**Part 5-1: Dynamic gain tilt equalizer –
Response time measurement**

FOREWORD

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International Standard IEC 62343-5-1 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

The text of this standard is based on the following documents:

FDIS	Report on voting
86C/883/FDIS	86C/899/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62343 series, published under the general title *Dynamic modules – Test methods*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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DYNAMIC MODULES – TEST METHODS –

Part 5-1: Dynamic gain tilt equalizer – Response time measurement

1 Scope and general information

1.1 Scope

This part of IEC 62343 contains the measurement method of response time for a dynamic gain tilt equalizer (DGTE) to change its gain tilt from an arbitrary initial value to a desired target value.

1.2 General information

The DGTE is categorized into three control methods as shown in Table 1. The direct control type is driven directly by voltage or current, the digital control type is operated by digital control system with digital signals, and the analogue control type is operated by analogue signals. The definition and the measurement method of response time for DGTE are different for the three control types. Table 1 also shows the configuration of operating systems and the correction for temperature dependency for three control types of DGTE. When the response time for the DGTE has temperature dependency, users may need to calibrate the temperature effect. The bottom row in Table 1 indicates the typical methods of the correction for temperature dependency (refer to Annex D).

Table 1 – Categorization of DGTE by the control method

	Direct control	Digital control	Analogue control
Control	By voltage or current directly	By command through digital circuit	By voltage or current through analogue circuit
Configurations			
Correction for temperature dependency	By control system	By digital circuit or control system	By analogue circuit or control system

2 Terms, definitions, abbreviations and response waveforms

2.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1.1**convergence time** T_c

time to converge from the first hit at the target $\pm Y$ % to the stay within the deviation $\pm Y$ % in the optical power from the output port of DGTE at pre-determined wavelength

2.1.2**latency time** T_l

for the direct and the analogue control types, time between the application of control signal and the change in optical power by $\pm X$ % from the output port of DGTE at pre-determined wavelength

2.1.3**processing time** T_p

for the digital control type, time between the application of control command and the change in optical power by $\pm X$ % from the output port of DGTE at pre-determined wavelength

2.1.4**response time** $(T_l \text{ or } T_p) + T_r + T_c$ **2.1.5****rise time** T_r

time to change from the initial $\pm X$ % to the target $\pm Y$ % in the optical power from the output port of DGTE at pre-determined wavelength

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time to be suppressed from the first hit at the target $\pm Y$ % to the final stay at the target within a required resolution of the optical power from the output port of DGTE at pre-determined wavelength

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CPU	Central processing unit
DGTE	Dynamic gain tilt equalizer
DUT	Device under test
O/E	Optical-to-electrical
PDL	Polarization dependent loss
TLS	Tunable laser source
WDM	Wavelength division multiplexing

2.3 Response waveforms

The definitions and symbols defined in 2.1 are shown in Figures 1 through Figure 3.