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**Wind energy generation systems –
Part 50-2: Wind measurement – Application of ground-mounted remote sensing
technology**

**Systèmes de génération d'énergie éolienne –
Partie 50-2: Mesurage du vent – Application de la technologie de télédétection
montée au sol**



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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Symbols, units and abbreviated terms	10
5 General	11
6 Classification of RSDs	13
6.1 General.....	13
6.2 Data acquisition	14
6.3 Data preparation	15
6.4 Principle and requirements of a sensitivity test.....	15
6.5 Assessment of environmental variable significance	21
6.6 Assessment of interdependency between environmental variables	22
6.7 Calculation of accuracy class	24
6.8 Acceptance criteria	26
6.9 Classification of RSD	27
7 Verification of the performance of RSDs	27
8 Evaluation of uncertainty of measurements by RSDs	30
8.1 General.....	30
8.2 Reference uncertainty	30
8.3 Uncertainty resulting from the RSD calibration test	30
8.4 Uncertainty due to RSD classification	32
8.5 Uncertainty due to non-homogeneous flow within the measurement volume.....	33
8.6 Uncertainty due to mounting effects	34
8.7 Combining uncertainties in the wind speed measurement from RSD ($u_{VR,i}$)	34
9 Additional checks	34
9.1 Monitoring the performance of the RSD at the application site	34
9.2 Identification of malfunctioning of the RSD	34
9.3 Consistency check of the assessment of the RSD systematic uncertainties.....	34
9.4 In-situ test of the RSD.....	35
10 Application to SMC	36
11 Reporting	36
11.1 Common reporting on classification test, calibration test, and monitoring of the RSD during SMC.....	36
11.2 Additional reporting on classification test	37
11.3 Additional reporting on calibration test	37
11.4 Additional reporting on SMC	38
Annex A (informative) Uncertainty due to non-homogenous flow within the measurement volume.....	39
Bibliography.....	40

Figure 1 – Tilt angular response $V_{\alpha}/V_{\alpha=0}$ of a cup anemometer as a function of flow angle α compared to cosine response (IEC 61400-50-1)

17

Figure 2 – Deviation versus upflow angle determined for an RSD with respect to the cup anemometer in Figure 1	17
Figure 3 – Example of sensitivity analysis against wind shear	19
Figure 4 – Example of wind shear versus turbulence intensity	23
Figure 5 – Example of percentage deviation of RSD and reference sensor measurements versus turbulence intensity	23
Figure 6 – Comparison of 10 min averages of the horizontal wind speed component as measured by an RSD and a cup anemometer	29
Figure 7 – Bin-wise comparison of measurement of the horizontal wind speed component of an RSD and a cup anemometer	29
Table 1 – Interfaces from other standards to IEC 61400-50-2	12
Table 2 – Interfaces from IEC 61400-50-2 to other standards	12
Table 3 – Bin width example for a list of environmental variables	18
Table 4 – Parameters derived from a sensitivity analysis of an RSD	20
Table 5 – Ranges of environmental parameters for sensitivity analysis	21
Table 6 – Example selection of environmental variables found to have significant influence	22
Table 7 – Sensitivity analysis parameters remaining after analysis of interdependency of variables	24
Table 8 – Example scheme for calculating maximum influence of environmental variables	25
Table 9 – Preliminary accuracy classes of an RSD considering both all and only the most significant influential variables	26
Table 10 – Example final accuracy classes of an RSD	26
Table 11 – Example of uncertainty calculation arising from calibration of an RSD in terms of systematic uncertainties	31

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WIND ENERGY GENERATION SYSTEMS –**Part 50-2: Wind measurement – Application of
ground-mounted remote sensing technology**

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IEC 61400-50-2 has been prepared by IEC technical committee 88: Wind energy generation systems. It is an International Standard.

This first edition of IEC 61400-50-2 is part of a structural revision that cancels and replaces the performance standards IEC 61400-12-1:2017 and IEC 61400-12-2:2013. The structural revision contains no technical changes with respect to IEC 61400-12-1:2017 and IEC 61400-12-2:2013, but the parts that relate to wind measurements, measurement of site calibration and assessment of obstacle and terrain have been extracted into separate standards.

The purpose of the re-structure was to allow the future management and revision of the power performance standards to be carried out more efficiently in terms of time and cost and to provide a more logical division of the wind measurement requirements into a series of separate standards which could be referred to by other use case standards in the IEC 61400 series and subsequently maintained and developed by appropriate experts.

The text of this International Standard is based on the following documents:

Draft	Report on voting
88/829/CDV	88/865/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61400 series, published under the general title *Wind energy generation systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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INTRODUCTION

This part of IEC 61400 specifies procedures and methods which ensure that wind measurements using ground-mounted remote sensing devices are carried out and reported consistently and in accordance with best practice. This document does not define the purpose or use case of the wind measurements. However, as this document forms part of the IEC 61400 series of standards, it is anticipated that the wind measurements will be used in relation to some form of wind energy testing or resource assessment.

The main clauses of this document are not mutually dependent. Therefore, it is possible that a user will refer to only certain of the main clauses rather than all clauses to adapt this document to their specific use case. However, the main clauses are presented in a logical sequence that could be applied in practice.

The technical content of this document could previously be found in IEC 61400-12:2017 [1]¹. Because of the increasing complexity of this source document, IEC TC 88 decided that a re-structuring of the IEC 61400-12 series of standards into a number of more specific parts would allow more efficient management and maintenance going forward. This document has been created as part of that re-structuring process.

¹ Numbers in square brackets refer to the Bibliography.

WIND ENERGY GENERATION SYSTEMS –

Part 50-2: Wind measurement – Application of ground-mounted remote sensing technology

1 Scope

IEC 61400-50 specifies methods and requirements for the application of instruments to measure wind speed (and related parameters, e.g. wind direction and turbulence intensity). Such measurements are required as an input to some of the evaluation and testing procedures for wind energy and wind turbine technology (e.g. resource evaluation and turbine testing) described by other standards in the IEC 61400 series. This document is applicable specifically to the use of ground-mounted remote sensing wind measurement instruments, i.e. devices which measure the wind at some location generally above and distant from the location at which the instrument is mounted (e.g. sodars, vertical profiling lidars). This document specifically excludes other types of RSD such as forward facing or scanning lidars. This document specifies the following:

- a) the procedure and requirements for classifying ground-based RSDs in order to assess the uncertainty pertaining from sensitivity of the RSD response to meteorological conditions that can vary between the RSD calibration place and time and the use case (specific measurement campaign – SMC) place and time;
- b) the procedures and requirements for calibration of RSDs;
- c) the assessment of wind speed measurement uncertainty;
- d) additional checks of the RSD performance and measurement uncertainty during the SMC;
- e) application of the wind speed uncertainty derived from the RSD calibration and classification to the measurements taken during the SMC (e.g. interpolation of uncertainty or calibration results to different heights);
- f) requirements for reporting.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 61400-50-1 *Wind energy generation systems – Part 50-1: Wind measurement – Application of meteorological mast, nacelle and spinner mounted instruments*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>