ISO/TR 9901:2021 (E)

Solar energy — Pyranometers — Recommended practice for use

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Selection of pyranometers and accessories

4.1 General
4.2 Pyranometer selection based on accuracy class
4.3 Pyranometer and accessory selection based on other considerations
4.4 Measuring system redundancy and spatial resolution
4.5 Common pyranometer accessories
4.5.1 Electronics, data acquisition and power supply
4.5.1.1 Electronics input impedance
4.5.1.2 Electronics grounding, lightning protection
4.5.1.3 Electronics accuracy
4.5.2 Heating and ventilation systems
4.5.3 Mounting stands and supports
4.6 Personal safety

5 Recommended practice for use

5.1 General
5.2 Pyranometers measuring plane of array and global horizontal irradiance
5.2.1 General
5.2.2 Installation
5.2.2.1 Selection of the installation site
5.2.2.2 Mounting and levelling of the pyranometer
5.2.2.3 Electrical installation
5.2.3 Heating and ventilation
5.2.4 Inspection and maintenance
5.2.4.1 Recommended practice for inspection and maintenance
5.2.4.2 Automated inspection/remote diagnostics
5.2.4.3 Daily routine
5.2.4.4 Weekly routine
5.2.4.5 Monthly routine
5.2.4.6 Yearly and two-yearly routine
5.2.5 Data acquisition and storage
5.2.5.1 Data sampling and recording interval
5.2.5.2 Data time stamps
5.2.6 Data quality control and correction
5.3 Pyranometers measuring diffuse radiation
5.3.1 General
5.3.2 Installation
5.3.2.1 General
5.3.2.2 Selection of the installation site
5.3.2.3 Installation of a shading device
5.3.3 Heating and ventilation
5.3.4 Inspection and maintenance
5.3.5 Data acquisition and storage
5.3.6 Data quality control and correction
5.4 Pyranometers measuring reflected radiation

5.4.1 General
5.4.2 Installation
5.4.3 Inspection and maintenance
5.4.4 Data acquisition and storage
5.4.5 Data quality control and correction
5.5 Pyranometer calibration and performance verification
5.5.1 Calibration
5.5.1.1 Indoor calibration according to ISO 9847
5.5.1.2 Outdoor calibration according to ISO 9846 and ISO 9847
5.5.2 On-site performance verification/check
5.5.3 Introduction of a new pyranometer sensitivity
5.6 Uncertainty evaluation of the measurement
5.7 Indoor use of pyranometers

Annex A (informative) Heating and ventilation systems

A.1 Need for heating and ventilation
A.2 Types of systems for heating and ventilation
A.3 System selection

Annex B (informative) Shading losses in reflected radiation measurement

Page count: 39