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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33599-2017

**Specification of Operation and Control for Photovoltaic Power
Station**

光伏电站并网运行控制规范

(English Translation)

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuer of this document shall not be held responsible for identifying any or all such patent rights.

This Standard was proposed by and shall be under the jurisdiction of China Electricity Council.

The drafting organization of this Standard. China Electric Power Research Institute, State Grid Dispatching Centre.

1 Application Scope

This Standard specifies the basic specifications of operation and control for photovoltaic power stations, as well as the requirements for operation management, power forecasting, power generation plan, active power control, reactive power control, relaying protection and automatic safety device operation, electric power communication operation, dispatching automation, equipment overhaul and accident recording and reporting.

This Standard applies to newly-built, rebuilt and extended photovoltaic power stations which are connected to the grid through the voltage class of 35 kV and above, and connected to the public grid through the voltage class of 10 kV.

2 Normative References

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

GB/T 14285, Technical Code for Relaying Protection and Security Automatic Equipment

GB/T 19964, Technical Requirements for Connecting Photovoltaic Power Station to Power System

GB/T 29321, Technical Specification for Reactive Power Compensation of PV Power Station

GB/T 31365, Testing Code for Photovoltaic Power Station Connected to Power Grid

GB/T 31366, Technical Requirements for Monitoring and Control System of Photovoltaic Power Station

GB/T 31464, The Grid Operation Code

GB 50794, Code for Construction of PV Power Station

GB/T 50796, Code for Acceptance of Photovoltaic Power Project

GB 50797, Code for Design of Photovoltaic Power Station

DL/T 516, Code for Operation and Administration of Power Dispatching Automation System

DL/T 544, Operation Management Code for Power System Telecommunication

DL/T 559, Code for Setting of 220 kV ~ 500 kV Relaying Protection Equipment

DL/T 584, Code for Setting of 3 kV ~ 110 kV Relaying Protection Equipment

DL/T 623, Evaluation Rules of Protection Equipment and Power System Stability Control Devices

DL 755, Guide on Security and Stability for Power System

NB/T 32011, Technical Requirement of Power Forecasting System for PV Power Station

3 Terms and Definitions

For the purposes of this document, the following terms and definitions and those defined in GB/T 19964 and GB/T 31464 apply.

3.1

photovoltaic (PV) power station

The electric power generation system and auxiliaries which directly transform solar radiant energy into electric power through the photovoltaic effects of the photovoltaic cells.

3.2

PV power forecasting

The forecast which is made on the active power of the photovoltaic power station through the technology and means including meteorological conditions and statistical regularity.

3.3

grid integration test for PV power station

The test to determine the grid integration performance in five aspects including the power quality, active power/reactive power control ability, low-voltage ride through ability, voltage/frequency adaptation ability and active power output characteristics of the photovoltaic power station.

3.4

dispatching automation system; it shall transmit to the grid dispatcher in time, accurately and reliably, the equipment operation information, meteorological information and power forecasting information of the primary systems and secondary systems of the photovoltaic power station.

5.1.7 The photovoltaic power station shall report to the grid dispatcher in time the

alterations of the primary system equipment and secondary system equipment of the photovoltaic power station and their safety protection schemes.

5.1.8 When the photovoltaic power station quits operation in emergency or trouble, it

shall report to the grid dispatcher immediately and start the grid-connected operation once again in accordance with the dispatching instructions only after obtaining the consent of the grid dispatcher. The photovoltaic power station shall keep records of accidents and report to the grid dispatcher in time.

0 h ~ 24 h of the next day at the times specified by the grid dispatcher every day, the

time resolution of the forecasting values 15 min.

15 min ~ 4 h in the future to the grid dispatcher every 15 min, the time resolution of the

forecasting values 15 min.

5.2.3 The monthly average absolute error of the short-term forecasting of the power

generation time (not including the output control time) of the photovoltaic power station shall be less than 0.15 and the monthly acceptability shall be greater than 80%; the monthly absolute error of the super short-time forecasting for the fourth hour shall be less than 0.10 and the monthly acceptability shall be greater than 85%.

5.3.1 The photovoltaic power station shall give suggestions of the yearly and monthly

power generation plans in time in accordance with the meteorological data and power forecasting, and submit to the grid dispatcher at the times specified.

5.3.2 The photovoltaic power station shall declare power generation plans in accordance with the results of PV power forecasting, submit the power generation plan curves for the next day to the grid dispatcher at the declaration times specified every day, and submit the super short-time power generation plan curves every 15 min to the grid dispatcher.