

CESI Type 1b TERNA Grid Code SCHEME

CERTIFICATION OF TYPE CONFORMITY OF ELECTRIC GRID FREQUENCY AND VOLTAGE REGULATION SYSTEMS

REGULATIONS

Document under surveillance by CESI Committee for Safeguarding Impartiality (CSI).
It replaces Regulations C5013458.

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1 OBJECT OF THE REGULATIONS

These Regulations define the operational procedures through which CESI, as Product Certification Body, within the framework of Accredia accreditation no. 00026 (Products / Services / Processes) for conformity assessment according to ISO/IEC 17065¹, carries out the conformity certification of electric grid frequency and voltage regulation systems against the requirements of ARERA Resolution No. 40/2021/R/EEL and Annex A.18 of TERNA Transmission, Dispatching, Development and Grid Security Code² ex clause 1, paragraph 4, of Italian Prime Ministerial Decree dated 11 May 2004, particularly with reference to Type 4 Verifications referred to in paragraph 6.4 of the same Annex.

In accordance with ISO/IEC 17067³, the certification scheme is classified as Type 1b and is based on the performance of on-site inspections and instrumental tests to ascertain conformity with the technical requirements established by TERNA.

The Certificate of Conformity issued by CESI attests that the regulation and control systems subject to verification have successfully passed the functional, performance, and control tests prescribed by Annex A.18, as listed in the certificate, demonstrating conformity with the technical requirements of the National Transmission System Operator (RTN).

In particular, in accordance with paragraph 6.4 of Annex A.18:

- a. for all plants in the initial commissioning phase;
- b. for all plants undergoing modernization or significant modifications, limited to the systems and controls affected by the interventions.

The verifications shall be carried out under the supervision and responsibility of CESI, which is also required to attend the tests marked with a flag (✓) in Annex B of Annex A.18, which must be performed to ensure correct execution and, in the case of first activations, to issue the Certificate of Conformity in compliance with the technical specifications of the Grid Code.

The execution of the activity is subject to the Client's acceptance of Accredia Regulation RG-01⁴, where applicable, as well as to the acknowledgment of the right of Accredia Inspectors (together with CESI Inspectors) to access the Client's premises.

CESI ensures that all personnel involved in the activity are free from conflicts of interest and provide the necessary guarantees of confidentiality.

These Regulations and their amendments are reviewed by the Committee for Safeguarding Impartiality (CSI) about compliance with the requirements of impartiality, confidentiality and independence.

¹ The activities are carried out within the "KEMA Labs" Business Unit of CESI

² The intervention of the Body accredited according to ISO/IEC 17065, is foreseen only for checks classified as "Type 4" as described in § 6 of Annex A.18 to Terna Grid Code.

³ Or equivalent national version. The same applies to all subsequent citations in the text.

⁴ Accredia Regulations are available on the web site www.accredia.it.

In accordance with ISO/IEC 17065, access to the Scheme is non-discriminatory, not conditioned by company size or by membership in any association or group, and is open to any Client submitting a formal application.

2 DEFINITIONS

- **Certification Scheme**
Certification system regarding products to which the same standards, the same particular rules and the same procedure apply.
- **Committee for Safeguarding Impartiality (CSI)**
Committee established by CESI as Product Certification Body accredited by Accredia according to the standard ISO/IEC 17065 and Inspection Body accredited by Accredia according to standard ISO/IEC 17020, which acts as a mechanism for safeguarding impartiality and supervises the product certification and inspection activities carried out by CESI, managing and assuring the independence, impartiality and the competence of the Body itself. The Committee is representative of all the main parties interested in the certification and inspection activities.
- **Preliminary Evaluation Report**
Intermediate document summarizing the progress of conformity assessments carried out.
It may concern construction inspections, evaluations of possible conformity extensions, inspections to tests performed in the presence of a CESI Inspector, etc.
It provides references to every relevant document ensuring traceability of the activities performed (drawings, construction documents, component certificates, test reports, calibration certificates, laboratory check-lists, non-conformities, etc.).
- **Evaluation Report**
Final document that briefly describes all the reference documents and information necessary to evaluate the results of the tests and checks required by a type conformity certification. The evaluation must bring to the decision on the conformity of the product with the reference normative documents.
- **Certificate of type conformity**
Certificate of conformity that attests that a product is in compliance with a particular standard or other normative document.
- **Non-Conformity (NC)**
Any technical finding that prevents the issue of the certificate; observations or recommendations are not foreseen.
- **System Subject to Certification**
The set of equipment and functions (controllers, protections, logics, interfaces, and control devices) verified as an integrated and coherent entity.
- **RTN (Rete di Trasmissione Nazionale)**
National Transmission Network.

3 FIELD OF APPLICATION

3.1 Systems subject to certification

The certification scheme covers regulation and protection systems connected to the National Transmission Network (RTN), subject to Type 4 verifications as defined in Annex A.18, including:

- frequency and voltage regulation systems (primary, secondary, and tertiary);
- interface and machine protection systems;
- communication and remote-control interfaces toward the dispatching system.

3.2 Reference requirements

The certification attests the conformity of regulation and protection systems with the technical prescriptions of Terna contained in Annex A.18 and in the applicable technical standards (CEI 0-16, CEI 0-21, network specifications).

4 GENERAL

4.1 CESI personnel

CESI entrusts the certifications activities to personnel employed or linked to a collaboration relationship with CESI, previously qualified according to specific procedures based on the specific skills possessed, in compliance with the applicable accreditation provisions.

4.2 Confidentiality

CESI, as Certification Body, is required to guarantee confidentiality during all inspection and conformity assessment activities and has a process for the analysis, assessment and management of risks to confidentiality.

CESI ensures that all information acquired during inspection activities, including the protection of Clients' property rights and information acquired from different sources (e.g. complaints, authorities, etc.), are treated in a strictly confidential manner, unless otherwise prescribed from:

- legal provisions (In such exceptional cases, the Client is made aware of the information disclosed to third parties);
- provision of accreditation bodies.

To guarantee the aforementioned confidentiality, the CESI staff involved in the inspection signs a formal commitment to confidentiality, a copy of which is provided to the Client upon request; furthermore, the inspection reports are made available exclusively to the Client with a copy for the CESI archive and for the inspectors.

4.3 Impartiality

CESI, as Certification Body, is required to guarantee its impartiality during all inspection and conformity assessment activities and has an impartiality risk analysis, assessment and management process.

CESI is not, and undertakes not to be, connected to a party directly involved in activities of: design, construction, supply, installation, acquisition, marketing, possession, use and maintenance of the products verified or like those verified and to these competitive.

4.4 CESI Code of Ethics and Italian Legislative Decree 8 June 2001 n. 231

CESI has adopted a Code of Ethics and a Model pursuant to Italian Legislative Decree 8 June 2001 n. 231 regarding the liability of legal persons, companies and associations even without legal personality, which is available on the website <https://www.cesi.it/about-us/overview/#code-ethics>.

Therefore, the Client who entrusts CESI with activities referred to in these regulations is required to read it and behave according to the highest ethical standards, committing himself to compliance with the CESI Code of Ethics and to fulfil his contractual obligations in ways suitable to avoid the occurrence of relevant conduct pursuant to Italian Legislative Decree 231/01.

4.5 CESI accreditations

4.5.1 Obligations in relation to accreditation

In certification activities, CESI generally operates under accreditation and is therefore required to apply the requirements imposed by the accreditation bodies. In particular, within the schemes and sectors in which accreditation is issued by ACCREDIA (Italian Accreditation Body), pursuant to the international standard ISO/IEC 17065, CESI must operate in compliance with this standard and the regulations and specific provisions issued by ACCREDIA and expressly referred to in this document.

ACCREDIA also has the right to carry out audits not only at CESI offices but also at CESI Clients, to verify CESI work within the accredited inspection schemes⁵.

The use of the Accredia mark or the reference to accreditation in the documents issued by CESI as an accredited certification body is subject to compliance with the provisions of ACCREDIA RG-09 document, in the current revision, and in particular the following:

- The Accredia mark must be used in such a way as not to create the impression that ACCREDIA gives any approval to a certification or that ACCREDIA accepts responsibility for the quality of the certifications, or for any opinion or interpretation that may derive from them.
- The use of the Accredia mark is prohibited to the Client. The use of the ACCREDIA mark is reserved for Certification Bodies and cannot be used by the Client who has received an inspection service from an ACCREDIA accredited Certification Body.

4.5.2 Suspension, renunciation or revocation of CESI accreditation

If CESI accreditation, necessary to operate, is suspended or revoked, or in the event of renunciation, CESI will inform the Client, as well as support him in any transition to another Certification Body.

CESI is in no way responsible for any damage caused to the Client by the suspension, renunciation, limitation of the extension or revocation of accreditation, except in cases of demonstrable fraud and gross negligence.

4.5.3 Subcontracting

Should it be necessary, after informing the Client, CESI reserves the right to subcontract part of the requested activities to third parties, where this is not excluded by the applicable legislation. CESI assumes full responsibility for every activity outsourced and guarantees that the person to whom the subcontract is entrusted is competent and compliant with the applicable regulatory provisions and is not involved with

⁵ Note: Updated information on CESI accreditation status is available on the websites <https://www.cesi.it/about-us/accreditations-certifications/>, and, for accreditations issued by ACCREDIA, www.accredia.it.

the design and manufacturing of the product/system, so as not to compromise the impartiality referred to in par. 4.3.

The Client, who will be informed of the details of the subcontracted activities as well as, if requested, of the references of the subcontractor, has the right to refuse, for justified reasons, such assignment to third parties within five (5) working days from the date of the communication.

4.6 Obligations to be borne by the Client

4.6.1 Client's obligations

The Client undertakes to:

- guarantee CESI personnel in charge of inspections access to the design, manufacturing, installation, inspection and testing locations, as well as provide the means and assistance necessary for CESI to carry out the requested service;
- with reference to §4.5.1, guarantee ACCREDIA inspectors, the Italian Accreditation Body, the possibility of accessing the aforementioned places, accompanied by CESI staff. These visits, the purpose of which is to monitor the work of CESI personnel and not of the Client, are regularly communicated with adequate notice.

4.6.2 Safety at work - Information obligation

The Client, pursuant to current legislation on safety and prevention of accidents at work, undertakes to provide CESI personnel and any accompanying persons with complete and detailed information relating to the specific risks existing in the work environment, in which they are intended to operate. Furthermore, through its representatives, the Client undertakes to promote cooperation and coordination for the purposes of implementing measures to protect and prevent risks at work, which may affect the work of the inspectors appointed by CESI and there any companions.

The Client, based on any existing specific risks, will indicate to CESI staff and any accompanying persons the appropriate personal protective equipment (PPE) and will implement every safeguard to allow the activity to be carried out in complete safety.

5 APPLICATION FOR CERTIFICATION

The Client shall submit to CESI a formal request, duly signed, using the available application form supplied by CESI, for each desired Certificate.

Such application form includes the following information:

- type of Certificate requested;
- applicable reference normative documents;
- identification of the Client;
- language in which the Certificate is to be issued (Italian or English).

The application shall be accompanied by the following documents:

- these Scheme Regulations, duly signed for acceptance;
- the General Sales Conditions; when the conditions for the acceptance signature exist.

Upon receipt of the application, CESI shall carry out a preliminary examination of the documentation submitted by the Client in order to verify its completeness and consistency with the Scheme.

In the event of a positive outcome, CESI shall inform the Client, prepare or update the related offer, and — upon receipt of a purchase order consistent with said offer — initiate the certification procedure.

CESI undertakes to maintain confidentiality towards third parties regarding all information required at the time of submission of the application (necessary to define subsequent activities) and any information obtained during the entire certification process.

The Client shall not publicize ongoing certification applications until the relevant Certificate has been obtained.

6 CERTIFICATION PROCEDURE

6.1 Conditions for granting certification

The Type 1b certification provides for the verification of the conformity of regulation and protection systems with the requirements of Annex A.18 through:

- inspection of the performance of on-site instrumental tests according to Annex B of Annex A.18 (ref. Par. 5.2), aimed at verifying the dynamic and static response of the generation system to network commands and disturbances;
- technical evaluation of the results, including analysis of any deviations and assessment of their acceptability for conformity purposes.

Verifications are conducted directly on the plant, whether in operation or under commissioning, under safe conditions and according to the methods defined by Terna Operational Guidelines.

During the inspection to the tests, it shall be verified that measurement and data acquisition instruments are calibrated and traceable, and that they are operated by qualified personnel.

Tests must be performed safely, with calibrated and traceable instruments, in the presence of the Client, the Network Operator, the laboratory in charge of conducting the tests and CESI.

6.2 Execution of on-site tests

Type verifications involve functional tests and measurements performed directly on the plant, aimed at assessing the conformity of frequency and voltage regulation systems.

Testing activities shall take place at the plant site, in the presence of representatives of the Client, the Network Operator, the laboratory in charge of conducting the tests and CESI.

The Certification Body shall evaluate the correctness of the test methods and recorded results, ensuring that data are reproducible, traceable, and verifiable.

6.3 Identification of the system subject to certification

The system subject to Type 1b certification consists of an integrated set of equipment and functions — such as voltage and frequency regulators, protection systems, interlocking logics, electrical measurements, communication interfaces, and control devices — that ensure the plant compliance with the requirements of Annex A.18 of the TERNA Grid Code.

For certification purposes, CESI proceeds with the unique identification of the certified system by means of:

- identification of the main components (hardware and software) involved in the regulating and protective behaviour of the system;
- description of the functional and logical configuration verified (schematic diagrams, control architectures, protection logics);
- verification of the correspondence between the installed configuration and that described in the approved technical documentation;
- assignment of a unique identification code to the system or configuration certified, which is indicated in the Evaluation Report and the Certificate of Conformity.

The descriptive documentation approved by CESI — including functional diagrams, lists of main components, software and firmware versions installed — constitutes an integral part of the technical certification dossier.

Any substantial modification to these elements requires an assessment of the continued validity of the Certificate and, if applicable, the initiation of an update procedure pursuant to paragraph 5.2.

6.3.1 Remote inspections

In circumstances of necessity (such as natural disasters, unforeseen unavailability, etc.), CESI may, with the Client's consent, make use of remote audit techniques in order to mitigate potential issues arising from test interruptions or unacceptable delays.

The methods for performing remote inspections are governed by an internal procedure that CESI will share at the appropriate time.

6.4 Evaluation of the results and issuance of the Certificate

CESI shall prepare a Preliminary Evaluation Report summarizing the results of the on-site inspections and verifications carried out on the plant, as well as the documentary verifications, highlighting the degree of conformity of the plant with the requirements of Annex A.18 of the TERNA Grid Code.

In accordance with the purposes of Annex A.18, Type 1b certification aims to attest the plant ability to ensure stability, continuity, and operational security with respect to the national electrical transmission network.

Should certain measurements not fully fall within the prescribed limits, and such deviations are due to uncorrectable design or functional constraints of the installed equipment, CESI shall evaluate the technical significance of the deviation and whether it does not compromise the overall performance of the system.

In such cases, CESI may report the anomaly as a justified technical note in the final Evaluation Report.

Conversely, where the detected non-conformities pose risks of instability, loss of regulation, or failure to respond to network disturbances, certification for those tests cannot be granted, and CESI shall inform the Client, specifying the reasons for the non-conformity.

If the results demonstrate conformity with the requirements of paragraph 5.2, and any identified non-conformities have been resolved, CESI shall issue the Certificate of Conformity, the issuance of which is subject to review by the CSI in accordance with its Regulations.

The Evaluation Report documents the outcomes and serves as the basis for the certification decision.

The Evaluation Report may be issued in either Italian or English.

The Certificate of Conformity shall be issued only after the technical evaluation and formal approval by the Certification Body.

7 VALIDITY, UPDATING AND CONTROL

7.1 Conditions for maintenance

In compliance with Accredia Technical Circular DC No. 51/2022, issued by ACCREDIA, "Provision regarding the accreditation of the TERNA Grid Code scheme pursuant to ARERA Resolution No. 40/2021/R/EEL and Annex A.18," the Certificate has unlimited validity over time, unless substantial modifications occur to the plant, to the regulation configurations or to the applicable normative references.

No periodic surveillance or annual verifications are foreseen, since the certification attests the conformity of the system in the configuration verified in the field at the time of testing.

The validity of the certificate is conditional upon the maintenance of the same technical and functional conditions found during certification.

Any modifications, including:

- updates or variations of firmware or software managing the regulating and protection systems;
- replacement or modification of hardware components relevant to the certified performance;
- changes to control or interface logics with the electrical network;

may compromise the validity of the certification and require a supplementary technical assessment by CESI.

It is the Client's responsibility to promptly inform CESI of any significant modification that may affect the certified performance.

In the absence of such notification, the certificate shall be considered no longer representative of the actual condition and may be declared invalid.

7.2 Conditions of validity

The Type 1b Certificate of Conformity attests the conformity of the verified plant and is valid exclusively for the plant itself and for the specific technical configuration tested.

The Client is required to ensure that the plant maintains unchanged technical conditions, regulation parameters and control logics as verified during certification.

Any substantial modification to the regulation systems, protection devices, or controller settings must be communicated to CESI, and may entail a new conformity evaluation.

7.3 Updating and transfer of the Certificate

The Client may request updating of the Certificate in the following cases:

- substantial modifications to the project or to the regulation and protection system;
- variations in the plant operational mode;
- technical or normative updates issued by TERN;
- transfer due to change of company name or ownership.

CESI shall assess the updated documentation and may require supplementary on-site verifications to confirm the continued validity of the certified requirements.

Modification of one or more identifying elements of the system (e.g. firmware versions, control logics, or protection configurations) constitutes grounds for re-evaluation of the certification.

In case of plant updating or change of ownership, the Client shall formally submit a request to CESI, attaching the updated technical documentation.

CESI shall evaluate the impact of the modifications and determine whether additional on-site tests or documentary reviews are necessary.

Upon positive outcome, a new Certificate shall be issued, replacing the previous one.

7.4 Checks on Certificate use

CESI periodically verifies the proper use of the certificate and of the reference to TERN conformity.

In the event of improper or misleading use, CESI may suspend or withdraw the certificate, informing the Committee for Safeguarding Impartiality (CSI).

7.5 Use of CESI logo

The Client can make full copies of the document, but he is not allowed to extract and use in any other way the CESI logo and the associated Accredia mark.

8 SUSPENSION AND WITHDRAWAL OF THE CERTIFICATE

The Certificate may be suspended by CESI in the following cases:

- The Client fails to comply with the obligations assumed for the issue of the Certificate;
- The conditions under which the Certificate was issued are no longer met.

The suspension of the Certificate entails the following effects:

- The prohibition to use the Certificate in association with products, catalogues, and commercial documentation;
- Notification of the suspension to the Committee for Safeguarding Impartiality (CSI) to allow appropriate review.

The Certificate may be withdrawn by CESI in the following cases:

- The Client ceases its activities;
- The conditions for maintaining the certification are no longer met;
- Recurrence of improper use of the Certificate is demonstrated.

The withdrawal of the Certificate entails the following effects:

- Withdrawal of the Certificate itself;
- Prohibition to use the Certificate in association with products, catalogues, and commercial documentation;
- Removal of the product from the list of certified products;
- Appropriate publication by CESI of the withdrawal notice;
- Notification of the withdrawal to the CSI to allow appropriate review.

In both cases, the CSI has the authority, at the conclusion of its review, to request CESI to modify its decisions.

9 COMPLAINTS AND APPEALS

The Client (or a third party) has the possibility to present complaints about the behaviour of CESI during the certification process or to propose an appeal to obtain that a decision taken by CESI during the certification procedure is modified.

All the complaints and appeals are submitted by CESI to the examination of CSI during the first meeting following their presentation.

CSI examines the reasons of the disagreement and the decisions eventually already taken by CESI and deliberates on the matter. CSI resolutions are mandatory for CESI.

10 CHANGES TO THE REGULATIONS

In case of changes while the certification activities are in progress, the Client is promptly informed by CESI and retains the right to accept or not the new version of the Regulations if the changes are not due to mandatory aspects.

An updated copy of the Regulations can be requested by consulting the website www.cesi.it.

11 10 REFERENCES

- Terna Grid Code – Annex A.18 (current edition)
- Annex B of Annex A.18 – List of Type 4 tests and verifications
- ACCREDIA Technical Circular DC No. 51/2022 – Provision regarding the accreditation of the Terna Grid Code scheme pursuant to ARERA Resolution No. 40/2021/R/EEL and Annex A.18
- ACCREDIA Regulations RG-09
- ACCREDIA Regulations RG-01
- ISO/IEC 17065:2012
- ISO/IEC 17067:2014
- CEI 0-16, CEI 0-21

The Client

Stamp and signature _____

Date _____

The Client declares explicitly of having read carefully and approved, with respect and to the effects of clauses 1341 and 1342 of the Italian Civil Code, all the sections of the present Regulations and in particular the following: 4 (Application for certification), 5 (Procedure for certification), 6 (Maintenance, duration, updating and transfer of the Certificate), 7 (Suspension and withdrawal of the Certificate).

The Client

Stamp and signature _____

Date _____