

## Distribution Code Consultation DCRP/18/11/PC

### Title: G98 and G99 – Minor Corrections and Housekeeping Modifications

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**Target Audience:** All current and prospective manufacturers, developers, owners and operators of generation (and storage) of any size connecting new generation equipment to distribution networks.

**Date Published:** 26 October 2018

**Deadline for responses:** 23 November 2018

#### Summary:

This Distribution Code public consultation is seeking the views from stakeholders on proposed modifications to ERECs G98 and G99 which have been identified by DNOs and stakeholders in the months since these documents were first consulted on and published.

#### 1 Introduction

Ofgem approved the implementation of the EU Network Code “Requirements for Generators” (RfG) on 15 May 2018 (with compliance required from 27 April 2019). The implementation consisted of parallel changes to the Grid and Distribution Codes, and the introduction of ERECs G98 and G99.

G98 and G99 were submitted to Ofgem in February 2018. After that date a number of familiarization and implementation workshops and meetings were held with stakeholders. DNOs and stakeholders have become progressively more familiar with the documents over recent months. Through this familiarization, a number of issues have come to light that stakeholders generally would like to see addressed. This consultation collects all the known issues together and proposes that the changes as described in the rest of this section 2 are made to G98 and G99.

The modifications suggested in this consultation are in addition to the modifications being progressed in workgroups GC0110 and GC0111 (clarification of limited frequency sensitivity mode to overfrequency (LFSM-O) performance requirements and clarification of fast fault current injection requirements). They are also in addition to the modifications associated with implementing the existing G59/G83 storage fast track connection process into G98 and G99.

The versions of G98 and G99 for this consultation therefore assume that GC0110 and the storage fast track modifications have been accepted, and the base text includes their drafting (which is not change marked). There is no draft legal text for GC0111 yet, so the GC0111 modification has no effect on the text in this consultation.

Draft revised versions of G98 and G99 (and G59 and G83) included as part of this consultation have the proposed housekeeping changes of this consultation marked up.

## 2 The Defects

Section 2 lists the proposed modifications in three groups: the first where there is a change with definite implications for some stakeholders, including Generators and Manufacturers; a group of minor clarifications but with no implications for compliance; and a third group of simple typographical and internal reference corrections.

### 2.1 Changes with definite implications for some stakeholders

#### 2.1.1 Interface Protection testing values

The interface protection requirements for Type A generators are based on the various requirements of G83 and G59, and as a result the minor differences between the historical approaches have been carried forward in G98 and G99. As it possible that type-tested and non-type-tested interface protection will co-exist in future, even possibly in the same installation, it makes sense to align the testing values to avoid confusion. The differences between the values are immaterial.

	G99 Form A2-4 Value (proposed for all Forms)	G99 Form A2-3 and G98 Form B Values (to be replaced)
U/F Stage 1 stability test	47.7 Hz; 30 s 47.2 Hz; 19.5 s	47.7 Hz; 25 s 47.2 Hz; 19.98 s
U/F Stage 2 stability test	46.8 Hz; 0.45 s	46.8 Hz; 0.48 Hz
O/F Stability test	51.8 Hz; 120 s 52.2 Hz; 0.45 s	51.8 Hz; 89.98 s 52.2 Hz; 0.48 s
U/V stability test	188 V; 5.0 s 180 V; 2.45 s	188V; 3.5 s 180V; 2.48 s
O/V Stage 1 stability test	258.2 V; 5.0 s 269.7 V; 0.95 s	258.2 V; 2.0 s 269.7 V; 0.98 s
O/V Stage 2 stability test	277.7 V; 0.45 s	277.7 V; 0.48 s

The values in form A2-4 are also used in forms B2-2 and C2-2, thus all stability tests for all sizes of power generating modules would be identical.

As these changes in value are immaterial to the correct functioning of the interface protection there is no value in causing manufacturers to repeat type tests on existing equipment. To cover this off a new clause 2.14 has been added to G99 to extend the validity of type tests under previous issues of G99. Similarly a new clause has been added as 2.17 in G98.

#### 2.1.2 Tests to ensure RoCoF protection correctly discriminates during high RoCoF

During discussions with stakeholders in May 2018 regarding testing and type testing, it was noted that as far as testing RoCoF protection devices in G99 was concerned the existing tests were marginal around the setting values; ie there were no tests that applied a high level of RoCoF to check both for correct operation (ie within the required time window) or restraint (for a high value of RoCoF that did not persist for more than 0.5 s). It was agreed that such tests had merit and should be incorporated and chosen at a value that was easily accomplished with the majority of protection test sets in common use. For simplicity a high RoCoF value of 2.5 Hzs<sup>-1</sup> can be used for both a tripping accuracy

test and a stability test, depending on its duration. These tests have been added to Forms A2-4, B2-2 and C2-2.

### **2.1.3 Importance of FON**

A sentence has been added to the end of Section 6.2, and a little clarifying text to 17.4, 18.4 and 19.4 in G99 to underline Generators have no rights operate a Type B, C or D Power Generating Module without a valid Final Operational Notification. The opportunity has also been taken to set a suggested maximum time between commissioning and FON receipt of 28 days.

## **2.2 Minor defects in original drafting**

### **2.2.1 Phased installations**

Although G99 was drafted to allow for some larger installations to be progressively commissioned, the paperwork did not always lend itself to support this easily. Modifications have been made to Form A3-1 Part 2, A3-3 Part 2, Form B3 Part 2 and Form C3 Part 2 to facilitate progressive commissioning.

### **2.2.2 Submission of Compliance Document for Type A**

Modifications to G99 Section 16.2, primarily 16.2.2 and 16.2.4, to make the timings of submission clearer.

### **2.2.3 Reconnection Times**

The tests in G98 Form C and G99 Forms A.2-1, A.2-3 for reconnection times have a mistake and have a stability test value of 196.1 V instead of the correct 180.0 V. Although manufacturers should correct for this and test using the correct value in future, this is not a material issue. There is no need to repeat type testing to recertify for this, as per the accommodation in 2.1.1 above.

### **2.2.4 Missing LMSF-O test steps**

Form A2-3 in G99 was missing the final two frequency steps in Section 9 of the form which have been added.

### **2.2.5 Duplication of non-standard voltage settings**

The issues of nominal voltage different from the statutory LV voltages is covered twice, in Section 10.6.14 and Appendix A6. Appendix 6 has been deleted.

### **2.2.6 Monitoring of tripping and auxiliary supplies**

The longstanding requirement from G59 that tripping etc supplies should be monitored, or lead to lock out on their failure, was correctly included in G99 for Type A PGMs, but was missed for Type B, C and D PGMs. This requirement has now been added to Forms B3 and C3.

### **2.2.7 Published fault levels**

In G99 12.3.1.7(c) and 13.3.1.11(c) it is stated that DNOs will publish maximum and minimum fault levels in their Long Term Development Statements. This is incorrect; the specification for the LTDS does not include minimum fault levels and it is not believed that this information is required for the purposes of fault ride through. The word "minimum" is therefore deleted in both locations.

### **2.2.8 Timing of PGMD submission for Type D PGMs**

In G99 a few words have been added to 19.2.1 to clarify when Generators should look to first submit the PGMD.

### **2.2.9 Manufacturers' Information**

It has been clarified in G99 21.2 that Manufacturers' Information includes both type-tested information, as well as other information that manufacturers might need to provide for any particular installation.

### **2.2.10 Type B simulation studies for reactive power**

Section B.4.2 and B.4.3 in Annex B.4 in G99 overspecified the requirements applicable to Type B PGMs (compared to that mandated in the RfG). The overspecified reactive power requirements have been removed.

### **2.2.11 Type B simulation studies for frequency response**

Section B.4.5 in Annex B.4 in G99 overspecified the requirements applicable to Type B PGMs (compared to that mandated in the RfG). The overspecified simulation study requirements have been removed.

### **2.2.12 Power Factor Control**

Section C.5.7 in G99 contained an erroneous obligation for the DNO to agree aspects of power factor control with National Grid. This has now been removed.

### **2.2.13 Governor/Control specification**

G99 13.2.6.1 included a redundant requirement to notify the DNO of the specification of the governor/controller. This has been removed.

### **2.2.14 Replace Minimum Generation with Minimum Stable Operating Level**

In the drafting of G99 the older defined term Minimum Generation was used, instead of the equivalent Minimum Stable Operating Level. For consistency with the Grid Code is proposed to use Minimum Stable Operating Level. The specifics of the definition have not changed.

### **2.2.15 Clarification that the PGMD must be submitted 28 days before synchronization**

Minor amendments have been made to Forms B2-1 and C2-1 to clarify that the PGMD should be submitted (albeit not yet fully complete) to the DNO at least 28 days before synchronization is first required, and a reference to Sections 17.2.2 and 18.2.2 is added which specify which parts of the PGMD must be complete at this time.

### **2.2.16 Inclusion of Witnessing and Commissioning paragraph for Type D**

The Witnessing and Commissioning paragraphs used for Type B and Type C PGMs had been omitted for Type D. These paragraphs have been included in Section 19.4. The subsequent paragraphs in Section 19 and their cross references have been renumbered.

### **2.2.17 Additional space for insertion of Manufacturers' Information reference numbers**

The table cells on Forms A2-2; A2-3 have been enlarged to aid the adding of manufacturers references into these cells.

### **2.2.18 Use of Type Tested in G98**

As only Fully Type Tested micro-generators can connect under G98 the use of the defined term “Type Tested” has been reviewed and removed or replaced. “Fully Type Tested” or reference to the “Type Test Verification Report” are used throughout.

### **2.2.19 Voltage Management Units in G98**

A paragraph has been added to G98 to clarify that any Micro-generator must be connected to the Connection Point side of any Voltage Management Unit installed in a Customers’ Installation.

### **2.2.20 Multiple Premises Connection Procedure in G98**

Clarity has been added to the procedure for multiple premises connection by moving paragraph 8.1.2 to the Section 5 which details connection procedures.

### **2.2.21 Consistency of G59 and G83**

Both G59 and G83 do not mention the existence of G98 and G99. A sentence needs to be added to both to make it clear that new installations connected on or after 27 April 2019 need to comply with G98 and G99 as appropriate.

## **2.3 Minor errors, typographical errors etc**

### **2.3.1 Labelling of forms**

The labelling of all forms in G99 has been standardized as “Form X-M (Annex X.M)”

### **2.3.2 Other minor corrections**

- G99 A.7 para 1 corrected reference from Annex 3 to Annex 2.
- In G99 PGF Owner has been replaced, where it occurs, with Generator.
- Two instances of User have been replaced with Generator.
- G98 Annex A2 Power Quality heading should be numbered A2.3
- G98 10.1.2 – Distribution Code is not a defined term, so the bold is removed
- Minor wording changes for clarity in G99: 1.2; 3.4; 9.7.2; 10.2.2; 10.4.1; 10.4.14; 14.4.1(a); 14.5.7; 15.3.3; 16.1.3; 17.1.2; 18.1.2; A.2-1 1; A2-2 1
- Bold for defined terms applied carefully to include the defined term, but not, for example, its plural ‘s’.
- DNO’s system corrected to DNO’s Distribution Network throughout

## **3 Applicable Distribution Code Objectives**

Impact of the modification on the Applicable Distribution Code Objectives:

Relevant Objectives	Identified impact
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To permit the development, maintenance and operation of an efficient, coordinated and economical system for the distribution of electricity	Positive
To facilitate competition in the generation and supply of electricity	Positive
To efficiently discharge the obligations imposed upon distribution licensees by the distribution licences and comply with the Regulation and any relevant legally binding decision of the European Commission and/or the Agency for the Co-operation of Energy Regulators;	Positive
To promote efficiency in the implementation and administration of the Distribution Code	Positive

#### 4 Consultation Questions

- i. Do you agree that all these modifications should be made?
- ii. If not, please explain which you think should not be made and the reasons for your view.
- iii. Would you suggest any alternative wording etc to any of the proposed amendments? And if so, please include the text you suggest.
- iv. Are there any other housekeeping or minor corrections you believe should also be made at this time?

#### 5 Next Steps

Responses to this consultation should be sent to the Distribution Code Review Panel Secretary at [dcode@energynetworks.org](mailto:dcode@energynetworks.org) by **1700 on Friday 23 November** on the pro-forma provided expressly for the purpose, or via any other convenient means. Responses after this date may not be considered.

**For more information, please contact:**

Richard Wood – Code Administrator - [dcode@energynetworks.org](mailto:dcode@energynetworks.org)