

EREC G98 & EREC G99 Frequently Asked Questions

Engineering Recommendations ERECs G98 and G99 both come into effect on the 27 April 2019. Both these ERECs contain significant changes to generator requirements for all generation sizes, including those <16 Amps per phase. This document contains frequently asked questions regarding ERECs G98 and G99. If you have any further questions please email ICE@enwl.co.uk.

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1 Introduction to ERECs G83 and G99

1.1 Why have ERECs G83 and G59 been replaced with ERECs G98 and G99?

A new piece of European Legislation called the Third Energy Package comprises of a number of Network Codes, one of which is entitled 'Requirements for Generators'. This code contains a number of legally binding technical and operational requirements for generation connecting to networks. Both ERECs G98 and G99 were written to encompass the new requirements of this RfG code in Great Britain, alongside previous G83/G59 responsibilities. ERECs G83 and G59 remain valid in that generation installed before 27 April 2019 must still be compliant.

1.2 Do I have to connect under ERECs G98 or G99?

If you are a generator wishing to connect generation up to (and including) 16 Amps per phase after 27 April 2019, you must comply with EREC G98 requirements. If you are wishing to connect generation larger than this, after 27 April 2019 then you will need to comply with EREC G99 requirements. If you are connecting **before** 27 April 2019 then you may connect under EREC G83 or G59 as appropriate.

1.3 Are there any exemptions?

If you are connecting battery storage technology or any emerging technology (as defined by Ofgem), there are elements of the requirements which you are exempt from. However you still need to comply with the remainder of the requirements. The exemptions for storage and emerging technologies can be found in Section A.4 of EREC G99 [here](#).

1.4 Does EREC G99 apply to regenerative equipment?

EREC G99 does not currently apply to regenerative equipment; however this is currently being considered by the ENA EU Network Codes Steering Group and may be changed in a future revision of EREC G99.

1.5 How do I know what technical requirements apply to my generator?

The technical requirements for connections are determined by their type. Type classification is dependent on the rating of the Power Generating Module which in turn depends on whether you are installing synchronous or asynchronous generators. Synchronous generators are classified separately eg 3 x 400kW generating units correspond to three separate Power Generating Modules at 400kW each. For asynchronous generating units, this example would create a 1.2MW Power Generating Module, as the units are aggregated together. In Great Britain, the four type categories are as follows:

- Type A: 0.8kW to < 1MW and connecting at a voltage <110kV
- Type B: 1MW to <10MW and connecting at a voltage <110kV
- Type C: 10MW to <50MW and connecting at a voltage <110kV
- Type D: ≥ 50MW or connecting at a voltage ≥ 110kV

Therefore in the above examples, the three synchronous generators would be Type A generators and the combined asynchronous system would be a Type B Power Generating Module.

1.6 What are FON's, EON's, ION's, and LON's?

There are a number of operational notifications that are in use under EREC G99. Which of these apply to your connection is dependent on whether you are connecting Type B, C or D generation.

FON: A FON is a Final Operational Notification which is issued to you by ENWL if you are connecting Type B, C or D generators, when we are confident that you have demonstrated full compliance with the relevant criterion for your type. You cannot operate your Power Generating Module in parallel until you have received this notification from us.

EON: An EON is an Energisation Operational Notification which is also only applicable to Type D generators. This must be issued to you before you can energise your internal network.

ION: An ION is an Interim Operational Notification which is used for Type D generators only. This must be issued before you undertake the first synchronisation of your Power Generating Module.

LON: A LON is a Limited Operational Notification which is issued by ENWL to a generator who previously held a FON but temporarily is non compliant with EREC G99 Requirements due to a modification/loss of capability of their Power Generating Module.

1.7 What are the main differences between G83 and G98?

EREC G98 is based on G83, with the additional of technical requirements in accordance with the introduction of the Requirements for Generators EU Network Code. As a result of this there are new forms, new terminology and new technical requirements.

The following new terminology is used:

- Fully Type-Tested
- Micro-Generation replaces the term Small Scale Embedded Generation

The following technical requirements have been added:

- Equipment shall be equipped with a logic interface (input port) in order to cease Active Power
- Frequency Withstand
- RoCoF Withstand (1.0 Hz/s)
- Limited Frequency Sensitive Mode – Over Frequency (LFSM-O)
- Active Power output with falling frequency
- Different protection settings

2 ERECs G98 and G99 Process at Electricity North West

2.1 What is the process from application to energisation under G89?

Under EREC G98 you will install your Microgeneration at site and then need to send ENWL a completed G89 form within 28 days of installation. ENWL will then check the validity of the type test information provided. If we do not believe your Microgeneration to be G89 compliant then you will be disconnected from the network until full compliance can be determined.

2.2 What is the process from application to energisation under G99?

You will need to make a formal application for a generation connection using the ENA G99 application form. We will process this application as normal and provide you with a connection offer within the statutory guidelines.

Upon acceptance of your generation connection offer, the team delivering your connection will assist you in preparing a 'Compliance Submission Programme'. This is a document that you will need to submit to ENWL detailing all the technical compliance criteria that your installation needs to comply with and details of how you intend to demonstrate your compliance of each criterion eg through site testing, type testing or simulation modelling. A template document will be available to assist you with this.

Once this document is approved, we will provide you with the relevant information to undertake simulation studies. You will then need to submit these studies, along with other evidence and your Power Generating Module Document (PGMD).

A PGMD is used by a generator to record compliance with EREC G99 requirements and we will review this document to determine whether or not the evidence provided is sufficient. This will be an iterative process, particularly for connections with a large export capacity. We would encourage you to submit your PGMD as soon as possible to allow sufficient time for review and approval of all the relevant evidence for your generation type and confirm the witness testing requirements. However you must submit your PGMD to ENWL a minimum of 28 days before your first synchronisation.

ENWL will then witness the relevant tests as part of the commissioning of your connection and then finally confirm the validity of your PGMD before we issue your FON and Connection Agreement which will then enable you to operate in parallel with the distribution network. You cannot operate in parallel until we have issued the FON for the installation.

2.3 Where are EREC G98 & G99 Application Forms available from?

Both the G98 and G99 forms are available on the [ENA website](#). Additionally, [G98](#) and [G99](#) forms are available on the ENWL website.

2.4 Can I use the same application form for all types of generation (eg Solar, Gas Synchronous or Battery Storage)?

Yes, the aforementioned G98 and G99 applications forms can be used for all types of generation technology. G99 forms should be used for all connections >16 Amps per phase / >50kW.

2.5 If we need to use a load limiting device, can we include this in the new forms?

You will be required to complete an ENA G100 information request form alongside your G99 form. Please refer to the ENA website for EREC G100 and Appendix A for the enquiry form.

2.6 I have an accepted connection offer where the initial application was made on a G59 form. Do I need to complete an EREC G99 form for my accepted connection?

Yes you will need to complete an EREC G99 form for your accepted connection if it is energising after 27 April 2019. This is because the application form is designed to follow the installation through from application to energisation and is one of the requirements listed in the Power Generating Module Document.

2.7 Does EREC G99 make any changes to Ofgem regulatory timeframes?

EREC G99 does not make any changes to any statutory or regulatory timescales such as Time to Quote. G99 is referenced in the Distribution Code, which defines the requirements for the use of distribution networks within Great Britain. The Distribution Code is maintained by all DNO's in accordance with their licence obligations and consequently all changes, including the introduction of G99 regulations, are approved by Ofgem.

2.8 Do ERECs G98/G99 apply retrospectively to existing G83/G59 compliant generation?

No, neither recommendations need to be applied retrospectively to existing energised generation that is compliant with the current G83/G59 requirements. However, if you make a significant change to your connected generators then this would change the configuration of your installation and as such would trigger the need for the generator to be made G98/ G99 compliant. Please make ENWL aware of any changes to your existing installation and we will determine with you whether the change is significant enough to warrant the installation needing to become G98/ G99 compliant.

2.9 Could you clarify the definition of a significant change further? For example replacing an existing wind turbine with one of the same specification?

As outlined above, it is believed that we will need to assess each case on an individual basis and we ask that you get in touch to inform us of any changes made to your existing installation. However it is anticipated that a replacement of a like for like generator, installed after 27 April 2019 and originally G59 compliant, will probably not need to comply with G99.

2.10 Can I install a G99 generator downstream of my existing G59 connection point?

You will not be able to install a G99 compliant generator behind a G59 compliant protection interface as the protection will not have the technical capabilities to allow the new generator to be fully G99 compliant. Therefore you will either need to change the protection interface at the connection point, making it G99 compliant or apply for a new point of connection for the G99 generator.

2.11 Will witness testing be vastly different to G59 witness testing? Can you provide a list of the G99 witness tests required?

We are not able to supply a list of EREC G99 witness testing requirements as this will vary for each generator. This is due to the fact that witness tests will be dependent on which compliance elements have already been proven by means such as Simulation Studies, Manufacturers Information and Type Test reports. Only type requirements that have not already been proven through other means will need to be tested at site and potentially witnessed. Additionally, witness testing requirements will depend on the type of Power Generating Module that is being connected to the distribution network.

2.12 Will you require witness testing for any Type A generators?

ENWL may witness site tests for Type A PGMs in line with EREC G99 section 16.3.

3 Further Questions Regarding EREC G98 and G99 Implementation

3.1 Section 7 of EREC G99 relates to Short Term Parallel Operating Mode. It states that at the DNO's discretion there is potentially an opportunity to agree a discretionary maximum operational frequency and duration for this mode, above what is indicated in the recommendation. What is ENWL's position on this?

EREC G99 defines the basis of short-term parallel operating as no more than 5 minutes in any month and no more than once a week, which is the same definition as in EREC G59. The time is limited because short-term parallel generators are not required to comply with some of the technical requirements that EREC G99 (previously G59) requires long-term generators to comply with.

ENWL specify the maximum frequency and duration of short-term parallel operation in accordance with the values included in EREC G99 section 7.3.3.1 and requires the installation of an electrical time interlock to ensure this aggregated period is not exceeded.

We would not look to deviate from the frequency and duration values defined in EREC G99 and we have not altered these previously under G59 requirements.

3.2 If I want to install multiple synchronous Power Generating Modules, do I need a separate interface for each module?

Although certain requirements of EREC G99 apply to each PGM this does not necessarily mean that you will need an individual interface for each PGM. There is scope for you to operate with a single incoming signal from ENWL across your entire installation.

3.3 Is it possible to use a type tested relay without the need for witness testing? Additionally, is this possible with a CHP module for a type tested relay, as previously this was limited to inverter modules?

EREC G99 permits type testing to be used to demonstrate compliance of entire PGM's (Fully Type Tested) or just components (Partially Type Tested). You are required to demonstrate your compliance using Form A2-1, A2-2 or A2-3 for Type A generation, Form B2-1 for Type B generator and Form C2-1 for Type C & D generation. The completion of these forms with type testing as evidence of interface protection compliance will negate the need for witness testing. However, it should be noted that Section 10.1 of EREC G99 states that on-site function tests will still be necessary if the interface protection was type tested in isolation.

3.4 Where is the database for Type Tested EREC G99 Equipment?

The Energy Networks Association (ENA) hosts a [Verification Report Register](#), which allows manufacturers of type tested generating units to upload documentation which demonstrates they meet the relevant requirements. The ENA will then provide the

manufacturer with a Type Test Reference Number which can be quoted both on application forms and in the PGMD or installation form for Type A.

3.5 Does a G83 type-tested inverter require new G98 type-testing?

Any Micro-Generators / Electricity Storage devices <16 Amps per phase which are connecting after 27 April 2019, must be fully type tested to comply with EREC G98. Generator inverters may only be installed after 27 April 2019 if they have been fully and successfully G98 type-tested.

No later than 28 days after commissioning, the installer must submit a Form B to us (the DNO) as a declaration that their micro-generation conforms to the requirements of G98.

3.6 My equipment supplier does not provide data sheets – what can I do about this?

In this instance, you will need to contact the generator manufacturer directly to enquire whether they provide equipment which is G98 or G99 compliant.

3.7 Will you be utilising Export Agreements or G100?

Export limitations will be defined in your Connection Agreement. Please refer to ENWL's [Electricity Specification 259](#) in order to find the requirements for Remote Emergency Tripping Units. We will follow the guidance of EREC G100 when utilising schemes such as Active Network Management to limit generator export.

3.8 I have embedded generation at my site. Do I need to demonstrate Reactive Power capability at the connection point?

Subsection 15.1.1 of EREC G99 states that Reactive Power capability can be demonstrated at the terminals of the generating unit rather than at the point of connection. If you wish to do this, you will need to agree this with ENWL prior to commissioning.

3.9 I believe that there is a revision to EREC G99 pending. Where can I find a copy of this revision?

The Electricity North West website includes a link to the most recent version of EREC G99, as published by the ENA. The ENA has issued a Distribution Code public consultation to seek views on the proposed modifications to EREC G99, Amendment 3. This consultation closed on 1 March (<http://www.dcode.org.uk/consultations/closed-consultations>) and we now await Ofgem's approval and the publication of G99/1-4 (Amendment 4). We shall update the link on our website, as necessary, when the new version is published.