



Amendment proposal C10/11, Edition 2.4

Subject: Grid Update

Changes proposed through public consultation (01/10/2026-01/12/2026)

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1 BACKGROUND TO THIS AMENDMENT

A thorough revision of C10/11 is scheduled as part of the publication of the NC RfG 2.0. The changing energy landscape and the lessons learned from the analysis of major European incidents (such as the Iberian blackout) call for preventive measures within a shorter timeframe than the publication of the new European Network Code RfG 2.0 in order to maintain grid stability.

- Adjustment of grid decoupling parameters (including the automatic separation system) to improve resilience to voltage and frequency variations.
- Automatic Voltage Control through Q(U) on low voltage to avoid increasingly frequent local overvoltages (and premature shutdowns), while still allowing maximum active power production for the DSU.
- Clarification of the principles of off-grid installations and island operation, and the conditions required for these (synchronisation and ATS), in order to better frame the rise in island installations. The trend is towards more grid-forming inverters, and often there is confusion between island operation or backup operation of a grid-connected system, and a genuine off-grid system.
- Raising the power limits for small installations in order to facilitate the energy transition for domestic installations as well. Broadening the criteria for installations subject to notification, meets the rise of residential bidirectional charging infrastructure (standard 11 kVA), and the increasing combination of renewable solutions at the residential level (heat pumps, EVs, home batteries, solar panels,...), making it more likely for regular households to exceed the 10 kVA limit.
- Raising the power limit for the installation of an external decoupling relay from 30 kVA to 56 kVA (limit between digital meter and AMR meter).

2 AMENDMENT – REVISED TEXT PROPOSAL C10/11

2.1 C10/11, §2 Scope of application, § 2.1 General

(...)

This document is not applicable to the following cases:

- Back-feeding loads (for example elevators or cranes) that are not in principle designed to generate electrical energy.
- Back-up power systems (including systems equipped with energy storage batteries) that are technically not capable to inject energy into the distribution network. These systems can therefore only feed loads that are downstream of the backup power system.
 - Local island operation, both wanted and unwanted, where not a single part of the distribution network is involved. See also definition in §4.1.12
- Off-grid power-generating units. See definition in §4.1.12. These are power-generating units operating in a local islanding mode and therefore never operate in parallel with the distribution network. If they feed (a part of) the DSU plant that can be connected to the distribution grid, the transfer between on-grid and off-grid mode has to be realized using a break-before-make principle.

2.2 C10/11, §4 Definitions and acronyms, § 4.1.7 Small power-generating plant

4.1.7 Small power-generating plant

A power-generating plant that meets all of the following conditions:

1. Power limit of power-generating units

The sum of the maximum power of all the power-generating units and/or the maximum injection at the DSO meter, cannot exceed the limits as indicated in Table 1 hereunder.

- A distinction is made between the installed power (in kVA) and the injected power (in kW) of the power generating installation.
- No distinction is made between the type of primary energy (solar, battery/energy storage, wind, etc.) used by the power-generating unit.

The table below is replaced by the one underneath.

	Connection to the low-voltage distribution network		Connection to the high-voltage distribution network
	Single phase connection to the distribution network	Three-phase connection to the distribution network	
Sum of the power of the power-generating units other than the possible energy storage systems	$\leq 5 \text{ kVA}^9$	$\leq 10 \text{ kVA}$	$\leq 10 \text{ kVA}$
Sum of the power of the energy storage systems	$\leq 5 \text{ kVA}^9$	$\leq 10 \text{ kVA}$	$\leq 10 \text{ kVA}$

Voltage level of the distribution network (at the network connection point)	Type of the connection to the distribution network (at the DSO meter)	Sum of the power values of all power-generating units (See maximum apparent power S_{max} in the list C10/26)	Injected power (at the meter, see condition 3)
low voltage	Single-phase	$\leq 5 \text{ kVA}^9$	No limit
		$\leq 18 \text{ kVA}$	5 kW
	Three-phase	$\leq 11 \text{ kVA}$	No limit
		$\leq 33 \text{ kVA}$	11 kW
high voltage	Three-phase	$\leq 11 \text{ kVA}$	No limit
		$\leq 33 \text{ kVA}$	11 kW

Table 1 - Maximum power limits for a small power-generating plant

Footnote 9 - Some DSOs *may allow a higher power, the applicable limit being mentioned on the website of the DSO concerned.*

On a single-phase connection, only an installation falling within the definition of a "small power-generating plant" is allowed.

On a three-phase connection, also non-small installations can be connected, provided the standard connection procedure including a network study is applied; see §5.2.

2. Automatic separation system

Each power-generating unit must be equipped with an automatic separation system.

This automatic separation system can be either integrated in the power-generating unit itself (which is generally the case), or external to it.

When using an external system,

- it must have a "single fault tolerance" according to EN 50549-1, and
- it must be of a type approved by Synergrid, as listed in the C10/21 list of Synergrid published on the website www.synergrid.be in the section 'Homologated materials'.

An external automatic separation system can protect different power-generating units, but this requires additional cabling.

Footnote 10 - According to the GREI, it is not necessary to provide a permanent accessible means of isolation to the DSO if an automatic separation system is used.

3. If presence of an injection limit in table 2 an energy storage system :

Use of a power control system compliant with the requirements in §7.11.2, to control the power injected on the distribution network.

~~In table 2, a hybrid system is classified as "power generation units other than possible energy storage systems". Consequently, hybrid systems do not need a power management system.~~

4. No particular case

The exceptions foreseen for particular cases as described in § **Error! Reference source not found.** do not apply to the power-generating plant.

2.3 C10/11, §4 4 Definitions and acronyms, § 4.1.12 Off-grid installations, island operation, backup operation, changeover, and synchronisation

4.1.12.1 Off-grid installations

An off-grid installation is an installation designed in a way that the power generating units present can never operate in parallel with the distribution network, not even sporadically.

In such an installation, the load is always supplied by the power generating units and never by the public distribution network. There is no electrical connection possible between the power generating units(source) and the network.

In off-grid installations, the power generating units are never connected to the public distribution network:

- The provisions of the present prescription do not apply to that part of the installation
- Homologation of the production units is not required.

Note: An electronic insulation (semiconductor) is also regarded as an electrical connection. In that case, the installation can no longer be regarded as off-grid, and the present regulation does apply.

4.1.12.2 Island operation

Island operation refers to a situation in which an installation, or part of it, is disconnected from the network and is supplied exclusively by the power generating units present. This refers to an installation that can also operate while connected to the network, or where the loads can also be supplied by the network.

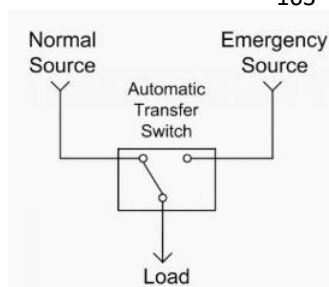
The two most common configurations are as follows:

1. Grid-connected operation is the standard operating mode. Island operation is only temporary; in case of a network failure, the power generating units serve as an emergency power supply.
2. Island operation is the standard operating mode, which means that under normal circumstances, the loads are supplied solely by the power generating units and not by the network. The network only serves as an emergency power supply, for instance, in the event of insufficient production of the power generating units.

In both cases, the power generating units may be connected to the public distribution network at certain moments:

- The provisions of the present regulation apply in full to that part of the installation
- Homologation of the power generating units is required.

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Exception: If the load can never be connected simultaneously by the distribution network and the power generating units, because a changeover between either network supply or islanding situation is provided, the power generating units are never connected to the network.

- The provisions of the present prescription do not apply to that part of the installation
- Homologation of the production units is not required.
- The changeover must comply with §4.1.12.4

4.1.12.3 Backup operation (“houseload operation” according to NC RfG)

A power generating unit with backup operation generally refers to a power generation unit that, in the event of a failure of the public distribution network, can automatically maintain power supply to some or all of the connected loads.

- Either this is done via a separate backup output, in which case only the loads connected to it remain live, whilst the rest of the installation has no power.
- Or the unit as a whole is capable of running in island operation. See island operation, case 1.

In this case, the power generating units are connected to the public distribution network during normal operation:

- The provisions of the present prescription apply in full to that part of the installation
- Homologation of the production units is required.

4.1.12.4 Conditions for changeover and synchronisation upon reconnection to the network

In all installations capable of island operation and/or backup operation (see 4.1.12.1, 4.1.12.2 and 4.12.1.3), there is always provision for switching between power supplied by the public distribution network and power supplied by the power generating units in island operation. This changeover is provided for:

- Either integrated into the power generating unit.
- Or via a separate transfer switch (often referred to as an ATS – Automatic Transfer Switch). See also the international standard IEC 60947-6-1:2005+A1:2013 on automatic transfer switches.

In all cases, the changeover must always comply with the following conditions:

- The mechanism includes a lock to prevent simultaneous connection to the network and the alternative power supply under any circumstances. During island operation, electrical isolation from the network must be ensured.
- 'Break-before-make' principle.
- In accordance with the GREI (General Regulations for Electrical Installations), the transfer switch must operate on all live conductors, and the two sources must not be connected in parallel untimely.

Switching back to network connection needs two conditions fulfilled:

- The conditions of D.8 (reconnection after tripping of the interface protection) must be fulfilled before connection is allowed. C10/26 homologated inverters should include the correct behaviour for connection and reconnection in C10/11 D.8.
- Synchronisation must be assured. A homologated C10/24 synchrocheck relay is not necessary if the parameters required for the synchrocheck as described in C10/11 §7.6.3 are fulfilled.
 - o Voltage difference < 5 %
 - o Phase difference < 5°
 - o Observation time = 0,5 seconds
- The power quality requirements set out in §8.2 (Disturbances caused by parallel operation, rapid voltage variations, flicker, harmonics, and imbalance) must also be met.

In case of frequent synchronisations (more than once per day), a relevant logging of U (both sides) and I just before and after the synchronisation (+5 seconds) has to be done. This information must be stored and provided to the DSO upon simple request.

For rotating machines (synchronous machines), a homologated C10/24 synchrocheck remains necessary.

2.4 C10/11, §5 Commissioning and decommissioning procedure, §5.2 Standard process, STEP 9b: check by DSO

In case of a suspected non-compliance of a DSU's power-generating plant or irregularities on the distribution network, the DSO reserves the right to check the proper operation and the operating modalities of the power-generating plant (or to have these checked) at all times.

The DSO may request the information directly from the manufacturer when the nature of an incident requires it, or when the audit relates to multiple production units of the same manufacturer or within the same region. See §6.4.

If such a check shows that the (operation of the) power-generating plant does not comply with C10/11, then:

- the DSU will bear the costs of this check ;
- the DSO will notify the DSU in writing of the conditions for further operation of the power generating module. A Limited Operational Notification may be granted or, in extreme cases, the authorization can be entirely withdrawn or suspended, in the respect of the regional regulation in force.
- the DSU ~~can~~ shall take appropriate action(s) determined by the nature of the infringements and repeat the commissioning procedure at the appropriate step.
- the conditions imposed by the DSO on the DSU may have financial consequences, including lost revenue (injection income, compensation resulting from the partial availability of production units, the loss of support mechanisms, ...).

246 2.5 [C10/11, §5 Commissioning and decommissioning procedure, §5.3 Simplified process for a small](#)
247 [power-generating plant, STEP 3: Execution](#)

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249 (...)

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251 Settings

252 During this step the following specific settings must be realized:

253 • The automatic separation system must be set in accordance with the requirements of these technical
254 prescriptions (see ANNEXE C, § C.1). The installer must provide a declaration of honour confirming
255 that the parameter setting of the automatic separation system is in accordance with the requirements
256 of these technical prescriptions. This declaration must be added to the technical dossier that will be
257 submitted to the DSO upon notification (see below).

258 • Within the required capabilities regarding reactive power exchange, the installer must set the control
259 mode for reactive power in accordance with the guidelines the DSO publishes in its website. If the
260 DSO does not publish a control mode, the power-generating unit must be set in accordance with §
261 **Error! Reference source not found..**

262 In the case of ~~the presence~~ of an ~~energy storage system injection limit in table 2 in §4.1.7~~, the power control
263 system must be set in accordance with § **Error! Reference source not found..**

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265 Phase imbalance (in the case of a 3-phase connection to the distribution network)

266 The power-generating plant must be designed in such manner that the imbalance occurring between the power
267 generated on different phases never exceeds the limit of 5 kVA.

268 ~~A multi-phased connection is mandatory for small power-generating plants with a maximum power exceeding~~
269 ~~5 kVA^{13, 14}, and highly recommended for power-generating plants with a maximum AC power exceeding~~
270 ~~3,6 kVA.~~

271 ~~Footnote 13 — The energy storage systems are not included in this calculation if their cumulated power ≤ the~~
272 ~~total power of the other power-generating units. Otherwise, it is the sum of the maximum powers of these~~
273 ~~energy storage systems that is decisive in this calculation.~~

274 ~~Footnote 14 Some DSOs allow higher power, the applicable limit being mentioned on the website of the DSO~~
275 ~~concerned.~~

276 The prescriptions for phase imbalance are specified in § **Error! Reference source not found..**

277 In case of ~~the presence of~~ an ~~energy storage system injection limit in table 2 in §4.1.7~~, refer to § **Error!**
278 **Reference source not found.**
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280 2.6 [C10/11, §5 Commissioning and decommissioning procedure, §5.3 Simplified process for a small](#)
281 [power-generating plant, STEP 5 : Notification](#)

282
283 Based on a technical dossier the DSU must report the impending commissioning of a power-generating unit.
284 The technical dossier must be submitted to the DSO.

285 The technical dossier consists on the one hand, of the (digital) notification form for a small power-generating
286 plant that is available from the DSO's website, and on the other hand, of additional information. The latter will
287 include at minimum:

- 288 • A single wire diagram indicating the power-generating unit's connection at the power-generating plant;
- 289 • The installer's declaration of honour confirming that the parameter setting of the automatic separation
290 system is in accordance with the requirements of these technical prescriptions (see step 3);
- 291 • If ~~there is an injection limit applicable for~~ the power-generating plant ~~following table 2 in §4.1.7 consists~~
292 ~~of a combination of an energy storage system~~, the installer's declaration of honour confirming that the
293 power control system has been set up in line with the prescriptions of this document (see step 3)
294 mentioning the set limit for the power injected in the distribution system

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2.7 C10/11, §5 Commissioning and decommissioning procedure, §5.3 Simplified process for a small power-generating plant, STEP 7 : Exploitation

STEP 7a: Exploitation by the DSU

The power-generating plant must be managed in accordance with the technical prescriptions C10/11.

STEP 7b: Check by DSO

In case of suspicion of non-compliance of a DSU's power-generating plant or irregularities on the distribution network, the DSO reserves the right to check or to have checked the proper operation and the operating modalities of the power-generating plant (STEP 7B).

The DSO may request the information directly from the manufacturer when the nature of an incident requires it, or when the audit relates to multiple production units of the same manufacturer or within the same region. See §6.4.

If such a check shows that the (operation of the) power-generating plant does not comply with C10/11, then:

- the DSU will bear the costs of this check ;
- the DSO will notify the DSU in writing that the power-generating unit may no longer operate in parallel with the distribution network, in compliance with the regional regulations in force;
- the DSU must take appropriate action(s) determined by the nature of the infringements and repeat the commissioning procedure at the appropriate step.
- the conditions imposed by the DSO on the DSU may have financial consequences, including lost revenue (injection income, compensation resulting from the partial availability of production units, the loss of support mechanisms, ...).

2.8 C10/11, §6 Technical basic requirements regarding the power-generating plant

6.1 General provisions

Details of the basic technical requirements the power-generating unit must comply with, together with the default settings, are included in ANNEXE D. For these requirements, reference is made as much as possible to relevant international standards and more specifically to CENELEC EN 50549-1 and EN 50549-2. The conformity assessment to these requirements is realized during the C10/26 homologation procedure ~~and is generally based on a certificate of conformity.~~

6.2 Priority of the protection functions

In addition to the basic technical requirements, **Error! Reference source not found.** also details the required settings.

In order to ascertain the power-generating unit is properly integrated in the power-generating plant, the following requirements relating to these basic technical requirements should also be met:

- The following protection functions take precedence over the required behavior of the power-generating unit:
 - The protection of the power-generating unit, including relating to primary energy;
 - The interface protection and the protection against disturbances in the power-generating plant itself.
- ~~• In the power-generating plant, there can be no element that could disconnect the power-generating unit from the distribution network (systematically), within the limits of:~~

~~○ Voltage:~~

~~* $85\% U_n < U < 110\% U_n$ for a connection to the LV network, where $U_n = 230\text{ V}$~~

~~* $90\% U_c < U < 110\% U_c$ for a connection to the HV network, where U_c is the declared voltage.~~

~~○ Frequency: $47,5\text{ Hz} < f < 51,5\text{ Hz}$.~~

~~○ The immunity to disturbances required of the power-generating unit, as shown in the figures in paragraph D.5~~

~~Exceptions: consecutive disconnections to one of the protection functions mentioned above, or the disconnections effected in the scope of normal operation.~~

6.3 Homologation for the C10/26 list

In the case of a small power-generating plant, all basic technical requirements in **Error! Reference source not found.** must be covered by the homologation of the type applicable to the relevant power-generating unit.

For another (not small) power-generating plant, it is not excluded, if only exceptionally, that the evaluation of the elements that are not covered by the homologation should be carried out.

~~This may for example relate to the support of the voltage via the reactive power if, for this purpose, addition (for example a capacitors bank) is added in addition to the power-generating unit.~~

4 Information obligation by the manufacturer of production units on list C10/26

If proper management of the grids by the DSO requires it, the DSO may request information from the manufacturer regarding its homologated production units. This may be the case, for example, in the event of:

- Incidents involving a large number of disconnections.
- Undesirable or unexpected behaviour during start-up, shutdown, remote monitoring, switching, visits/interventions on the grid, or safety procedures.
- Warnings regarding system stability, congestion, or other risks to grid operations.
- Post-fault analysis, coordinated and mandated by authorities.
- Other similar situations where the compatible operation of the production unit must be verified.

The DSO shall inform the manufacturer of the scope and duration of the situation for which the compatibility check is requested.

In these situations, the manufacturer must document and make available the following information within one month:

- event logs;
- ~~• measurement data;~~
- the configuration file valid at that time containing the set security parameters (Appendix C).
- All available measurement data of parameters such as P, Q, U, I, and f, with an appropriate time resolution;

The data must be provided in digital format so that they can be analysed using standard IT tools.

2.9 C10/11, §7 Additional plant requirements, §7.5 Means of isolation, §7.5.2 Specific rules for a power-generating plant ≤ 30 kVA ≤ 56 kVA, other than a small power-generating plant

There is no need to provide a means of isolation as described above if all of the following conditions are met:

- The maximum capacity of the power-generating plant is ≤ 30 kVA ≤ 56 kVA (existing + new), ~~without prejudice to unless a possible~~ stricter limit is imposed by the GRIE.
- Each of the power-generating units is provided with an automatic separation system with setting according to § **Error! Reference source not found.** 'settings of the automatic separation system (integrated or external)". If an external system is used, it must have a "single fault tolerance", in accordance to the standard EN 50549-1, and be of a type homologated by Synergrid ~~and included in the C10/21 or C10/23 lists.~~
- The type of each power-generating plant is homologated by Synergrid ~~and included in the C10/26 list.~~ See ~~the relevant list~~ the website www.synergrid.be under the heading "Gehomologeerde materialen" (Dutch) or "Matériels homologues" (French) [Homologated materials].

The power-generating plants meeting all these conditions are not required to be equipped with a inter-face protection system other than the automatic separation system(s) (see § **Error! Reference source not found.**).

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395 2.10 C10/11, §7 Additional plant requirements, §7.11 Energy storage systems, §7.11.2 Power control
396 system

397 If an energy storage system is present in the power generating installation, ~~or if an injection limit as set out in~~
398 ~~table 2 in §4.1.7 applies~~, a power control system must be provided to control the power injected on the
399 distribution network. The power control system must operate in such a way that the power injected into the
400 distribution network never exceeds a specified limit.

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402 2.11 C10/11, §7 Additional plant requirements, §7.11 Energy storage systems, §7.11.2 Power control
403 system, §7.11.2.1 Requirements for a small power-generating plant

404 The power control system receives its information

- 405 • either via the P1 port of the digital meter of the DSO;
- 406 • or via an EnFluRi sensor.

407 Use of another directional sensor or meter is not allowed.

408 The power control system has to be configured in such a way that at any time the power injected into the
409 distribution network is limited to the ~~injection limit as set out in table 2 in §4.1.7~~ ~~maximum power of the other~~
410 ~~power-generation units. In case of absence of other means of power-generation in the power-generating~~
411 ~~plant, this maximum power is equal to zero.~~

412 If, however, the URD wants to be able to inject into the network a power higher than the sum of the
413 maximum powers of the other means of power-generation, the standard procedure for commissioning the
414 installation, described in §5.2., should be applied

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416 2.12 C10/11, §8 Interaction with the distribution network, §8.2.5.2 Additional requirement for a small power-
417 generating plant

418 In case of a multi-phase connection to the public grid, ~~the power-generating unit is connected grid to multiple~~
419 ~~phases~~, it must be ensured that the maximum power imbalance between the various phases ~~is lower than~~
420 ~~does not exceed the limit of 5 kVA.~~

421 ~~If the power-generating plant consists of multiple single-phase power-generating units, it must be ensured~~
422 ~~that the maximum power imbalance between the various phases is lower than 5 kVA. It should therefore be~~
423 ~~ensured that the power-generating units are optimally distributed across the three phases. Compliance with~~
424 ~~this limit must be guaranteed by the design of the installation without having to install an imbalance~~
425 ~~protection relay as described in section §7.6.7.~~

426 This balance can be monitored in the following ways through the design of the installation:

- 427 • Optimally distribute the single-phase power generating units across the three phases
- 428 • Maintaining balance via a three-phase production unit technically capable of controlling and
429 optimizing each phase separately during energy import/export, thereby limiting phase imbalance to a
430 maximum of 5 kVA.
- 431 • Ensure that generation (usually solar energy) and battery storage (home battery, EV charger, ...) are
432 connected to the same phase as much as possible.
- 433 • Monitoring of phase imbalance by setting an appropriate injection limit per phase.
- 434 • The installation of a protection relay against power imbalance (as referred to in § 7.6.7)

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Examples :

Phase 1	Phase 2	Phase 3	Autorised ?
		5 kVA	✓
	5 kVA	2 kVA	✓
3 kVA	3 kVA	3 kVA	✓
		3 kVA + 3 kVA	✗ Max. imbalance > 5 kVA
2 kVA	2 kVA	2 kVA + 1 kVA	✓
3 kVA			
2 kVA	2 kVA	2 kVA + 4 kVA	✓
3 kVA	3 kVA	3 kVA + 2 kVA	✗ Sum > 10kVA (the simplified procedure is not applicable because the plant is not a small power-generating plant)

Table 6 – Examples of combinations of power-generating units

Note: in those examples, a power-generating unit with a three-phase connection is indicated by It is important that the power is distributed equally by the power-generating units across the three phases at all times.

Function	Trip setting
Overvoltage 10 min mean	230 V + 10 % no delay*
Overvoltage	230 V +15 % no delay*
Undervoltage	230 V -20 % no delay*
Overfrequency	51,5 Hz no delay*
Underfrequency	47,5 Hz no delay*
LoM	according to EN 62116
*« No delay » means that no time delay is added to the intrinsic technical duration required to initiate the disconnection. The operate time may not exceed 200ms.	

Table 8 – Settings of the automatic separation system

Function	Trip setting
Overvoltage 10 min mean	230 V + 10% , no delay
Overvoltage	230 V + 15% , 3 seconds delay
Undervoltage	230 V -20% , 3 seconds delay
Overfrequency	51,5 Hz , 3 seconds delay
Underfrequency	47,5 Hz, 3 seconds delay
LoM (Loss of Mains, anti-islanding detection) according to EN 50549-1/-2, §4.9.4	According to EN 50549-1/-2, §4.9.4 (tested according to EN 62116) If one the methods listed below is implemented, the parameters settings specified below shall be used.
df/dt (ROCOF)	2 Hz/s, 700 ms
Activation of a narrower frequency window based on local voltage criteria (Switch to narrow frequency band)	Activation function: $U_{dir} < 85\% U_n$ $U_{inv} > 5\% U_n$ $U_{res} (3 U_0) > 5\% U_n$ U_{dir} and U_{inv} can be replaced in the activation function by $U < 85\% U_n$ Narrower frequency window: $f > 50,3 \text{ Hz}$, 3 s $f < 49,7 \text{ Hz}$, 3 s
Vector shift	7° (three-phase), 0 s This method is not advised if other LOM methods are available.

Table 2 – Settings of the automatic separation system

Function	Range settings (Trip value Time delay*)	Default settings (Trip value Time delay*)
U>>	> 110 % U _n 0 s	115 % U _n 0 s
U>	≤ 110 % U _n 0 – 3 s	110 % U _n 1 s
U<	50 – 85 % U _n 0 – 1,5 s	70 % U _n 1,5 s
U<<	15 – 50 % U _n 0 - 5 s	15 % U _n 0,25 s
f>	51,5 Hz 0 s	51,5 Hz 0 s "
f<	47,5 Hz 0 s	47,5 Hz 0 s "
U ₀	20 % U _n 0 – 1,5 s	20 % U _n 1,5 s
Both df/dt (RoCoF) and activation of a narrower frequency window based on local voltage criteria should be present as island detection functions. All other island detection functions must be switched off.		
df/dt (RoCoF)		1 - 2 Hz/s 200 ms "
Vector jump***		7° (three-phase) 0 s
Activation of a narrower frequency window based on local voltage criteria.****		Activation function*****: U _{dir} < 85% U _n U _{inv} > 5% U _n U _{res} (3 U ₀) > 5% U _n Narrower frequency window: f> 50,3 Hz, 0,5 s f< 49,7 Hz, 0,5 s
* A 0 s time delay means that no relay is added to the intrinsic technical duration required to initiate disconnection. The set delay is therefore the minimum value authorized by the tool used for programming the relay. The total duration of the shutdown may never exceed 0.12 seconds. ** Depending on the chosen protection relay, another time delay might be needed in order to assure the operate time is about • 100 ms for functions f< and f> • 300 ms for function RoCoF Remark: The term 'operate time' is clarified in Figure 8. *** Only applicable to existing power-generating plants according to article 3 'Validity' exception 4. **** This method complies with the description in the European standardization documents EN 50549-1 and EN 50549-2 of 'Example strategy 1' in their annex 'Examples of protection strategies' (see Figure 7 hereunder for the schematic diagram) ***** U_{dir} and U_{inv} can be replaced in the activation function by U< 85% U_n		

Table 9 – Settings of the interface protection relay

Function		Range settings (Trip value Time delay*)	Default settings (Trip value Time delay*)
U>>		> 110% U _n 0 - 5 s	115% U _n 3 s
U>		≤ 110% U _n 0 – 60 s	110% U _n 30 s
U<		50 – 85% U _n 0 – 5 s	80% U _n 3 s
U<<		10 – 50% U _n 0 - 5 s	10% U _n 0,5 s
f>		50 – 52 Hz 0 – 5 s	51,5 Hz 3 s
f<		47,5 -50 Hz 0 - 5 s	47,5 Hz 3 s
U ₀		5% - 50% U _n 0 – 5 s	20% U _n 2 s
LoM (Loss of Mains, island detection) according to EN 50549-1/-2, §4.9.4		Except for ROCOF and narrow frequency, all other island detection functions should be deactivated.	
	df/dt (RoCoF)	Mandatory presence	2 Hz/s, 700 ms
	Activation of a narrower frequency window based on local voltage criteria (Switch to narrow frequency band)	Mandatory presence <i>See also EN 50549-1/-2, Annex F Examples of protection strategies, F.2 Example strategy 1, and figure 7 on the next page.</i>	Activation function U _{dir} < 85% U _n U _{inv} > 5% U _n U _{res} (3 U ₀) > 5% U _n <i>U_{dir} and U_{inv} can be replaced in the activation function by U< 85% U_n</i> Narrower frequency window: f> 50,3 Hz, 3 s f< 49,7 Hz, 3 s
	Vector jump (vector shift)	If present: deactivated. <i>Only allowed for existing power generation installations according to chapter 3 "validity" exception 4.</i>	7° (three-phase), 0 s
* A 0 s time delay means that no relay is added to the intrinsic technical duration required to initiate disconnection. The set delay is therefore the minimum value authorized by the tool used for programming the relay. The total duration of the shutdown may never exceed 0.12 seconds. ** Depending on the chosen protection relay, another time delay might be needed in order to assure the operate time is about • 100 ms for functions f< and f> • 300 ms for function RoCoF Remark: The term 'operate time' is clarified in Figure 8.			

Table 3 – Settings of the interface protection relay

453 2.15 [C10/11, ANNEX D Technical basic requirements regarding the power-generating units, D.3 Integrated](#)
454 [automatic separation system](#)

455
456 This clause is applicable to power-generating units with a maximum power $\leq 30 \text{ kVA} \leq 56 \text{ kVA}$.

457
458 2.16 [C10/11, ANNEX D Technical basic requirements regarding the power-generating units, D.7.1 Voltage](#)
459 [support by reactive power \[NC RfG Art 17 2.\(a\) + Art 20 2.\(a\)\]](#)

460 (...)

461 **D.7.1.1 Specific for a small power-generating plant (see §4.1.7)**

462 By default, the power generation unit must operate according to the following rules:

- 463
- When the voltage $\leq 105\% U_n$: $\cos \phi = 1$ ($Q=0$)
 - ~~When the voltage $> 105\% U_n$: free operation with $1 \geq \cos \phi > 0,9$ under-excited- (no over-excited operation allowed)~~
- 464
465

466 If the power-generating installation is connected to the low-voltage distribution network, the Q(U) control mode
467 is applied as standard and is mandatory. The settings for this Q(U) control mode are as follows (see standard
468 EN50549-1 for details and definitions):

- 469
- Activation when voltage is $105\% U_n$ ($U_n 230V$)
 - The activation follows a proportional curve
 - At $108\% U_n$ and above, the maximum reactive power (absorption, voltage-reducing) of $33\% P_0$ is generated.
 - The response is based on a time constant of 3 seconds (description see EN 50549-1)
- 470
471
472
473

474
475 **D.7.1.2 Specific for another (not small) power-generating plant**

476 If applicable, the details of the reactive power control mode to be activated in the power-generating unit shall
477 be provided by the DSO during the installation procedure. This setting might be reviewed by the DSO during
478 the lifetime of the power-generating module.

479 If the power-generating installation is connected to the low-voltage distribution network, the Q(U) control mode
480 is applied as standard and is mandatory. The settings for this Q(U) control mode are as follows:

- 481
- Activation when voltage is $105\% U_n$ ($U_n 230V$)
 - The activation follows a proportional curve
 - At $108\% U_n$ and above, the maximum reactive power (absorption, voltage-reducing) of $33\% P_D$ is generated
 - The response is based on a time constant of 3 seconds (description see EN 50549-1)
- 482
483
484
485
486

487 (...)

488

489 2.17 [C10/11, ANNEX D Technical basic requirements regarding the power-generating units, D.7.2 Voltage](#)
490 [related active power reduction P\(U\)](#)

491

492 Voltage relating active power reduction ~~is allowed and even recommended~~ in order to avoid disconnection due
493 to the operation of the overvoltage protection, ~~is optional~~, but must be complementary to the requirements set
494 out in D.7.1. The P(U) control mode must be applied in such a way that the Q(U) default mode takes effect
495 first (see section D.7.1). Therefore P(U) activation threshold cannot be smaller than $108\% U_n$.
496

497 When implemented, the power-generating unit must comply with the relevant requirements of the applicable
498 standard EN 50549-1 or EN50549-2 (edition 2019, see clause 4.7.3 « Voltage related active power reduction
499 »).

500