

Explanatory document

33023:2024-10

Certification of voice alarm control and indicating equipment (VACIE) and its components to EN 54-16 and EN 54-4

Foreword

This explanatory document was produced in response to issues raised in the market for public address equipment, concerning certification to EN 54-16 and EN 54-4 of voice alarm control and indicating equipment (VACIE) and its components. The explanatory document takes the form of a catalogue of questions and answers.

Specifically, uncertainty exists concerning the extent to which individual components of VACIE certified to EN 54-16 can be used in other systems. The explanations below are therefore intended in particular as a source of information on why the use of individual components (such as amplifiers) to “upgrade” existing voice alarm control and indicating equipment from other manufacturers, and marketing of these components for this purpose, is not permissible in cases where the amplifiers concerned have been tested only as part of a “laboratory system”, and not as part of the VACIE in which their use is intended. Attention is also drawn to the legal risks of such an approach.

1. Is certification for voice alarm control and indicating equipment to EN 54-16/EN 54-4 and for loudspeakers for voice alarms to EN 54-24 required in Europe, and if so, why?

Yes: certification is required, since a voice alarm system, comprising voice alarm control and indicating equipment (VACIE), its power supply and loudspeakers for the purpose of voice alarms, is subject to the European Construction Products Regulation (EU CPR No 305/2011)¹.

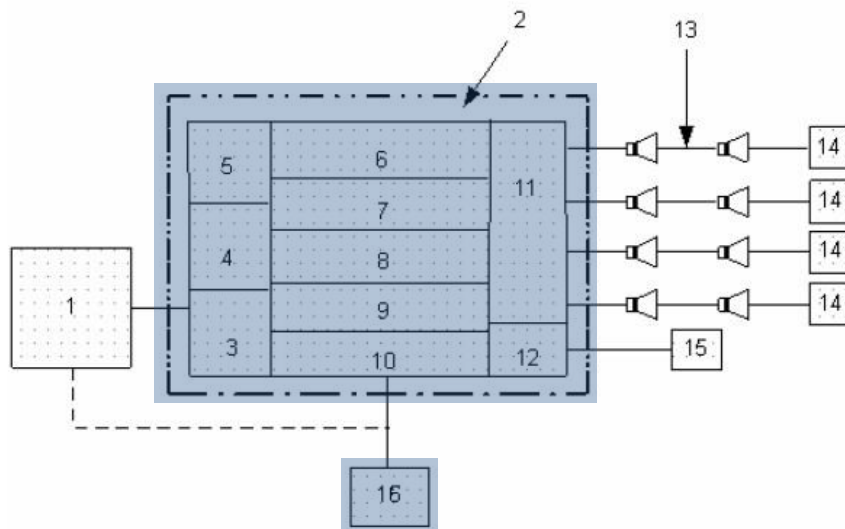
A construction product falls under the EU CPR when it is placed or made available on the market in the European Union as part of a business activity and a harmonized European standard in accordance with the EU CPR exists for it. The relevant standards for voice alarms are EN 54-16, EN 54-4 and EN 54-24. The references of these harmonized standards have been published by the European Commission in the Official Journal of the EU.

Should a harmonized standard not exist for the construction product or the construction product not be fully covered by a harmonized standard, the manufacturer must apply for a national usability certificate or a European Technical Assessment (ETA) for the construction product.

¹ Link to the document: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02011R0305-20140616>

2. What are the components of voice alarm control and indicating equipment to EN 54-16 and EN 54-4?

Figure 2 in Annex D of EN 54-16:2008-06 shows the components of a voice alarm system, as follows:



Key:

1	CIE (to EN 54-2)	9	message generation
2	VACIE	10	amplification
3	fire alarm interface	11	voice alarm zone outputs
4	emergency microphone(s) and control	12	fire alarm device outputs
5	operational microphone(s) and control	13	voice alarm zones
6	indicators	14	end-of-line device
7	manual controls	15	fire alarm devices
8	processing, prioritizing and signal routing	16	power supply equipment

Figure 1: Components of voice alarm control and indicating equipment; source: EN 54-16:2008-06

3. Which of these components of the voice alarm control and indicating equipment must be certified to EN 54-16?

Voice alarm control and indicating equipment is tested and certified as a unit to EN 54-16, i.e. all components of the VACIE, including amplifiers, signal processors, monitoring units, voice stations and switches (see Figure 1 in Question 2), are tested in combination by a notified body. A certificate of constancy of performance is issued and a unique number assigned in accordance with the EU CPR for the unit as a whole. These in turn form the basis for the manufacturer's declaration of performance.

Example: An amplifier (A) certified as part of VACIE (A) may not be used as part of VACIE (B) unless the amplifier is also certified with VACIE (B) as a whole. The same holds for all other components of the VACIE.

When VACIE is certified, its components are not certified individually, but always collectively as a unit. This is also referred to in the introduction to EN 54-16:

"This European standard does not specify requirements for components of the VACIE as separate parts; they are tested as part of the voice alarm control and indicating equipment as a whole."

4. Can an individual amplifier or other discrete component forming part of the voice alarm control and indicating equipment be certified to EN 54-16?

No: as explained in the answer to Question 3, an individual amplifier or other component of the VACIE cannot be certified separately (as a standalone product) to EN 54-16. Components may be stated in the certification only as part of VACIE from a specific manufacturer and certified in full to EN 54-16. It follows that EN 54 certificates cannot be issued in respect of separate components of the VACIE. A certificate can be issued only by a notified body and only for VACIE that has been tested as a unit.

5. Can an individual component of certified VACIE be used separately as a “certified product” in other, unspecified VACIE with the effect of certifying the new combination of components to EN 54-16?

No: combination in this way of individual components (such as amplifiers) of a certified VACIE unit does not give rise to VACIE certified to EN 54-16. The VACIE produced by the new combination of components would require certification in its own right as a unit to EN 54-16.

6. Can individual components of the voice alarm control and indicating equipment that are required in accordance with EN 54-16 be excluded from certification?

No: refer also to the explanation under Question 3.

The only exceptions are “optional functions with requirements” in accordance with Annex B and components described as an “option with requirements”. Examples are emergency microphone(s) (see Clause 12 of EN 54-16) and voice alarm manual control (see Clause 10 of EN 54-16).

7. Can voice alarm control and indicating equipment to EN 54-16 be used without a power supply to EN 54-4?

No: this is addressed clearly in EN 54-16, Sub-clause 4.3:

4.3 Power supply

Power supply equipment, external or included in the VACIE, shall comply with the requirements of EN 54-4.

EN 54-1 also describes the power supply as being part of the VACIE:

3.54 power supply equipment

component of a fire detection and fire alarm system which supplies power for the CIE or VACIE and/or other components, including those fed with power from the CIE or VACIE

It follows that VACIE can be certified to EN 54-16 only if the power supply is certified to EN 54-4.

8. What is the solution if the power supply for the voice alarm control and indicating equipment or parts of it (e.g. Prosound amplifier or network switches with 230 V power supply) cannot be certified to EN 54-4 and certification to EN 54-16 is thus not possible?

The ETA is the solution for such cases. An ETA enables construction products to be marketed throughout Europe when they are not (or not fully) covered by a harmonized standard (e.g. EN 54-16/EN 54-4).

9. What risk arises when the voice alarm control and indicating equipment in a project is planned, installed and commissioned with construction products some or all of which are not certified?

VACIE must bear a CE mark in accordance with the EU CPR. This CE mark documents the conformity of the product (in this case, the VACIE) with the declaration of performance, i.e. the construction product's conformity with its declared performance in accordance with the EN 54-16 harmonized standard.

Should this CE mark not be applied or should the VACIE to EN 54-16 contain components that have not been tested and certified together with the VACIE in accordance with the EU CPR, the VACIE may not be placed on the market in the EU or used as a construction product in the context of a business activity. Should this nevertheless occur, it would constitute a legal violation of the EU CPR for economic operators such as manufacturers and distributors, and a violation of the building regulations of the German states for users such as installers.

10. Do EN 54-16 and EN 54-4 also place requirements on the planning, design, installation, commissioning and maintenance of a complete voice alarm system?

No: EN 54-16 and EN 54-4 are solely product standards addressing the VACIE as a construction product in its own right, made up of its components (see Question 2 for details).

EN 54-16 specifies requirements, test methods and performance characteristics for VACIEs installed in buildings for use in the event of fire. The alarm signal is transmitted in the form of voice recordings, acoustic signals and live announcements.

EN 54-4 sets out requirements, test methods and performance characteristics for power supplies installed in conjunction with fire alarm systems or voice alarm systems.

11. Which standards and regulations govern the planning, design, installation, commissioning and maintenance of voice alarm systems?

Requirements for the planning, design, installation, commissioning and maintenance of voice alarm systems are governed by national application standards in the respective EU member states. The application standards of selected European countries are listed below as examples:

- Europe (general):
CEN/TS 54-32:2015
Fire detection and fire alarm systems. Planning, design, installation, commissioning, use and maintenance of voice alarm systems
- France:
NF S61-936:2013-05
Fire safety systems – Alarm equipment for evacuation – Design requirements – Systèmes de sécurité incendie (SSI)

PD CEN/TS 54-32:2015-07

Systèmes de détection et d'alarme incendie. Planification, conception, installation, mise en service, utilisation et maintenance des systèmes d'alarme

- United Kingdom (UK):

BS 5839-8:2023

Fire detection and fire alarm systems for buildings.

Code of practice for the design, installation, commissioning and maintenance of voice alarm systems

BS 7827:2019

Designing, specifying, maintaining and operating emergency sound systems for sports grounds, large public buildings, and venues. Code of Practice

PD CEN/TS 54-32:2015

Fire detection and fire alarm systems. Planning, design, installation, commissioning, use and maintenance of voice alarm systems

- Italy:

UNI ISO 7240-19:2010

Sistemi fissi di rivelazione e di segnalazione allarme d'incendio – Parte 19: Progettazione, installazione, messa in servizio, manutenzione ed esercizio dei sistemi di allarme vocale per scopi d'emergenza

UNI CEN/TS 54-32:2015

Sistemi di rivelazione e di segnalazione di incendio – Parte 32: Pianificazione, progettazione, installazione, messa in servizio, esercizio e manutenzione dei sistemi di allarme vocale

- Netherlands:

NEN 2575-2:2012

Fire safety of buildings – Evacuation alarm installations – System and quality requirements and guidelines for locating of alarm devices

– Part 2: Loud alarm evacuation alarm installation type A

NEN 2575-3:2012

Fire safety of buildings – Evacuation alarm installations – System and quality requirements and guidelines for locating of alarm devices

– Part 3: Loud alarm evacuation alarm installation type B

- Austria:

ÖNORM F 3012:2023-12-01

Elektroakustische Notfallsysteme, bestehend aus Einzelkomponenten – Anforderungen

ONR CEN/TS 54-32:2014-12-15

Brandemeldeanlagen – Teil 32: Projektierung, Montage, Inbetriebnahme, Betrieb und Instandhaltung von Sprachalarmsystemen

ÖNORM F 3074:2020-05-15 ENTWURF

Instandhaltung von elektroakustischen Notfallsystemen (ENS)

- Poland:

CEN/TS 54-32:2015

Fire detection and fire alarm systems. Planning, design, installation, commissioning, use and maintenance of voice alarm systems

- Spain:

PNE 23007-32 (Proyecto)

Sistemas de detección y alarma de incendios – Parte 32: Planificación, diseño, instalación, puesta en marcha uso y mantenimiento de sistemas de alarma por voz (Version Español basada en CEN/TS 54-32:2015)

- Switzerland:
SES-Richtlinie: Sprachalarmanlagen (SAA) & Elektroakustische Notfallwarnsysteme (ENS) – Planung, Einbau und Betrieb (2021-06)
- Germany:
DIN VDE 0833-4:2024-06
Gefahrenmeldeanlagen für Brand, Einbruch und Überfall
Teil 4: Festlegungen für Anlagen zur Sprachalarmierung im Brandfall

DIN CEN/TS 54-32 VDE V 0833-4-32:2016-04
Brandmeldeanlagen – Teil 32: Projektierung, Montage, Inbetriebsetzung, Betrieb und Instandhaltung von Sprachalarmsystemen
German version of CEN/TS 54-32:2015
Note: Applicable only with the prior legally binding agreement of the building supervisory authorities.

During planning and implementation of a voice alarm system in Germany, the building supervisory legislation of the individual German states must be observed in the first instance.

ZVEI explanatory document 33014 (guide to selection and planning of systems for raising the alarm by voice announcements in the event of danger) provides support for selecting the relevant application or system standard for the construction project in question, and shows the differences in application of the individual standards.

The guide is available free of charge in the form of a [PDF download](#) from ZVEI e.V., Section Safety and Security, LGB expert group.

12. Where can further and non-proprietary information be found?

Further information on voice alarm systems, sound systems for emergency purposes and relevant standards can be found in ZVEI explanatory document 33004 (electro-acoustic alarm systems, with explanations of and supplements to standards, legal references and technical rules).

The explanatory document is available free of charge in the form of a [PDF download](#) from ZVEI e.V., Section Safety and Security, LGB expert group, on its website.

Contact

Fabian Stegmaier • Senior Manager Safety & Security Technologies • Section Safety and Security
Tel.: +49 30 306960 28 • Mobile: +49 162 2664 923 • Email: Fabian.Stegmaier@zvei.org

ZVEI e. V. • Verband der Elektro- und Digitalindustrie • Charlottenstrasse 35/36 • 10117 Berlin • Germany
Lobby Register No: R002101 • EU Transparency Register ID: 94770746469-09 • www.zvei.org

Date: 17.10.2024