



NSAI
Standards

Irish Standard
I.S. EN 16704-2-1:2016

Railway applications - Track - Safety
protection on the track during work - Part 2-
1: Common solutions and technologies -
Technical requirements for Track Warning
Systems (TWS)

I.S. EN 16704-2-1:2016

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

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EUROPEAN STANDARD

EN 16704-2-1

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English Version

**Railway applications - Track - Safety protection on the
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technologies - Technical requirements for Track Warning
Systems (TWS)**

Applications ferroviaires - Voie - Protection et sécurité
durant des travaux sur la voie - Partie 2-1: Solutions
communes et technologie - Exigences relatives aux
dispositifs d'annonce des circulations (TWS)

Bahnanwendungen - Oberbau - Sicherungsmaßnahmen
während Gleisbauarbeiten - Teil 2-1: Allgemeine
Lösungen und Technologien - Technische
Anforderungen an Warnsysteme an Gleisen (TWS)

This European Standard was approved by CEN on 6 August 2016.

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EN 16704-2-1:2016 (E)

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EN 16704-2-1:2016 (E)

European foreword

This document (EN 16704-2-1:2016) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This European Standard is one of the series EN 16704 “*Railway applications – Track – Safety protection on the track during work*” as listed below:

- *Part 1: Railway risks and common principles for protection of fixed and mobile work sites*
- *Part 2-1: Common solutions and technology – Technical requirements for Track Warning Systems (TWS)*
- *Part 2-2: Common solutions and technology – Technical requirements for barriers*
- *Part 3: Competences of personnel related to work on or near the railway track*

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Introduction

The purpose of this standard is to define the requirements for Track Warning Systems (TWS) used to warn people about approaching trains and rail vehicles when on or near the track during their work.

TWS can be subdivided into the following types:

- LOWS – Lookout Operated Warning Systems;
- ATWS – Automatic Track Warning Systems;
- SCWS – Signal Controlled Warning Systems.

Each class can be used as a warning system by itself or with an additional function that can influence approaching trains and rail vehicles. For instance LOWS-I, ATWS-I or SCWS-I (-I: influence function).

This standard defines minimum system requirements for TWS.

EN 16704-2-1:2016 (E)

1 Scope

This European Standard defines minimum functional and non-functional requirements for Track Warning Systems (TWS) used to warn persons about approaching trains and rail vehicles during their work on or near the track. These systems may also have an additional function that can influence the approaching trains and rail vehicles. The influence could be a stopping, passing or other function.

This European Standard is applicable to:

- systems, sub-systems and components within TWS, including those containing software;
- new TWS;
- new integrations of systems, sub-systems and components into existing TWS; and
- modifications of TWS developed according to this standard.

It is also recommended to use this standard for single warning units (e.g. simple electrical horns).

This European Standard does not apply to the following items:

- hazards during the installation/removal of the TWS caused by trains and rail vehicles on the lines;
- hazards caused by the improper use of TWS;
- hazards caused by the improper behaviour of persons working on or near the track;
- hazards caused by the (unauthorized) presence of persons on or near the track;
- CO₂-horns (tyfons), human operated pressure signal horns, flags, detonators or machine warning systems according to UIC 644;
- national safety regulations to plan and operate TWS in track.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 894-3:2000+A1:2008, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 3: Control actuators*

EN 16704-1:2016, *Railway applications - Track - Safety protection on the track during work - Part 1: Railway risks and common principles for protection of fixed and mobile work sites*

EN 50121-4, *Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus*

EN 50125-3:2003, *Railway applications - Environmental conditions for equipment - Part 3: Equipment for signalling and telecommunications*

EN 50126-1:1999, *Railway applications - The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Basic requirements and generic process*

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