

Svenska Elektriska Kommissionen, SEK

Fastställt	Utgåva	Sida	Ingår i
2002-03-20	1	1 (1+28)	SEK Område 9

© Copyright SEK. Reproduction in any form without permission is prohibited.

## Järnvägsanläggningar – Utrustning för radiostyrning av godstågslök

*Railway applications –  
Radio remote control system of traction vehicle for freight traffic*

Som svensk standard gäller europastandarden EN 50239:1999. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50239:1999.

---

ICS 33.200; 45.060.10

---

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK, som också kan lämna upplysningar om **sakinnehållet** i standarden.  
Postadress: SEK, Box 1284, 164 29 KISTA  
Telefon: 08 - 444 14 00. Telefax: 08 - 444 14 30  
E-post: sek@sekom.se. Internet: www.sekom.se

---



EUROPEAN STANDARD

**EN 50239**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1999

---

ICS 33.200; 45.060.10

English version

**Railway applications**  
**Radio remote control system of traction vehicle for freight traffic**

Applications ferroviaires  
Système de radiocommande à distance  
des locomotives et locotracteurs affectés  
au trafic fret

Bahnanwendungen  
Funkfernsteuerung von  
Triebfahrzeugen für Güterbahnen

This European Standard was approved by CENELEC on 1999-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

---

## Foreword

This European Standard was prepared by SC9 XA, Communication, signalling, and processing systems, of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50239 on 1999-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2000-10-01
- latest date by which the national standards  
conflicting with the EN have to be withdrawn (dow) 2002-10-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only. In this standard, annex A is normative and annexes B and C are informative.

## Contents

Introduction.....	4
1 Scope.....	5
2 Normative references.....	5
3 Definitions .....	6
4 The radio remote control system and its components .....	8
5 General operational requirements .....	8
6 Radio remote command signals.....	8
7 Stop functions .....	9
8 Prevention of inadvertent movement whilst traction vehicle at standstill .....	10
9 Requirements for the transmitter, receiver, traction vehicle control unit and associated interface .....	10
10 Radio transmission procedure .....	12
11 Safety process of the system components .....	12
12 Safety acceptance and approval.....	14
13 Maintenance, modification, extensions .....	14
Annex A (normative) Some examples of basic railway operational applications and the correlation to safety integrity level.....	15
Annex B (informative) Typical schematic system diagram .....	27
Annex C (informative) Bibliography .....	28

## Introduction

This is a European Product Standard dedicated to the design and application of a radio remote control system on traction vehicles for freight traffic to provide remote control by an operator of the traction vehicle. Control functions are usually provided by manual control on the traction vehicle e.g. acceleration, brakes etc.

The European Product Standard considers the minimum requirements with regard to the following aspects:

- operational requirements for the use of the radio remote control system;
- technical and safety requirements for the overall system;
- safety acceptance and approval.

The radio remote control system is a safety related associated system. This European Product Standard uses the following European Standards for guidance:

- EN 50126; Railway applications - The specification and demonstration of reliability, availability, maintainability and safety (RAMS)
- EN 50128; Railway applications - Software for railway control and protection systems
- ENV 50129; Railway applications - Safety-related electronic systems for signalling
- EN 50155; Railway applications - Electronic equipment used on rolling stock

These named European Standards require for the design of the radio remote control system that a systematic approach should be taken to:

- implement hazard analysis, risk assessment and defining of risk criteria;
- identify the risk, quantifying and reducing the risk by safety related functions to reach a level as low as reasonably practicable as defined in clause 11 and Annex A;
- define the overall system safety requirement specification for the radio remote control system including its operational application necessary to achieve the required risk reduction as defined in clause 11 and Annex A;
- select a suitable system architecture;
- plan, monitor and control of technical and operational activities necessary to transform the system safety requirement specification into the safety related radio remote control system.

## 1 Scope

This European Product Standard specifies the characteristics of operational and technical requirements for the overall system design as well as safety acceptance and approval, maintenance, modifications and extensions of the radio remote control system for the use in railway network in relationship with other European Standards.

This European Product Standard applies only for the use of radio remote control systems for freight traffic.

If the radio remote control system is modified in such a way that the system safety may be compromised it is necessary that safety reviews are carried out throughout the system lifecycle.

This European Product Standard is not applicable to existing systems (i.e. those which had already been accepted prior to the creation of this standard). However as far as reasonably practicable this European Product Standard applies to modifications and extensions to existing systems.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1037	Safety of machinery - prevention of unexpected start-up
EN 50126	Railway applications - The specification and demonstration of dependability, reliability, availability, maintainability and safety (RAMS)
EN 50128 <sup>(*)</sup>	Railway applications - Software for railway control and protection systems
ENV 50129	Railway applications - Safety related electronic systems for signalling
EN 50155	Railway applications - Electronic equipment used on rolling stock
EN 50159-1	Railway applications - Communication, signalling and processing systems -- Part 1: Safety related communication in closed transmission systems
EN 50159-2 <sup>(*)</sup>	Part 2: Safety-related communication in open transmission systems
EN 60870-5-1	Telecontrol equipment and systems -- Part 5: Transmission protocols Section 1: Transmission frame formats