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**Intelligent transport systems (ITS) —  
Cooperative intersection signal  
information and violation warning  
systems (CIWS) — Performance  
requirements and test procedures**

*Systèmes intelligents de transport (ITS) — Systèmes d'avertissement  
d'information et de violation du signal d'intersection coopérative  
(CIWS) — Exigences de performance et modes opératoires d'essai*

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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

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## Introduction

The main system function of cooperative intersection signal information and violation warning systems (CIWS) is to warn drivers who are about to violate an intersection's traffic signal to stop at the prescribed location. The CIWS is intended to provide a cooperative vehicle and infrastructure system that reduces the likelihood and severity of crashes at signalized intersections by providing the signal phase information and/or by warning the driver that an intersection signal violation is about to occur. The system uses information communicated from the roadside infrastructure to determine if a warning should be given to a driver.

The purpose of implementing CIWS is to reduce violations of traffic signals at signalized intersections to: (a) reduce fatalities, (b) reduce the number and/or severity of injuries, and (c) reduce property damage associated with collisions.

This International Standard addresses CIWS for use in road vehicles approaching signalized intersections.

This International Standard may be used as a system level standard by other standards, which extend the CIWS to a more detailed standard utilizing wireless communication technologies. Issues such as the specific requirements for the function and performance of communication technology or traffic control facilities (including traffic signal controllers) will not be considered in this International Standard.

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# Intelligent transport systems (ITS) — Cooperative intersection signal information and violation warning systems (CIWS) — Performance requirements and test procedures

## 1 Scope

This International Standard specifies the concept of operation, system requirements, and test methods for cooperative intersection signal information and violation warning systems (CIWS) at signalized intersections. CIWS are intended to reduce the likelihood of crash injury, damage, and fatality by enhancing the capability of drivers to avoid crash situations at signalized intersections.

The scope of CIWS standardization includes basic functions, functional requirements, performance requirements, information contents, and test methods.

The characteristics of the technologies used to communicate between the signal controller and the vehicles are not addressed by this International Standard nor are the behavioural responses by drivers, the various capabilities of vehicles on the road, or the multitude of combinations of these two characteristics.

## 2 Normative references

There are no normative references cited in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### stopping distance

distance,  $X_v$ , travelled by a vehicle with the speed of  $v$ , from the time the driver receives CIWS warning until the vehicle comes to a complete stop

Note 1 to entry: This includes the distance travelled during the driver perception and reaction time.

### 3.2

#### speed of vehicle

speed of the subject vehicle,  $v$

### 3.3

#### time to arrive at stop line of intersection

$TTAI$

time needed for a vehicle approaching the intersection at a speed of  $v$  to travel the distance,  $X$ , from its current location to the stop line

$$TTAI = \frac{X}{v}$$

### 3.4

#### traffic signal phase

green, yellow, and red intervals within a cycle that are assigned to an independent traffic movement or combination of movements