

This is a preview of "ISO 23132:2020". [Click here to purchase the full version from the ANSI store.](#)

First edition
2020-07

Road vehicles — Extended Vehicle (ExVe) time critical applications — General requirements, definitions and classification methodology of time-constrained situations related to Road and ExVe Safety (RExVeS)

Véhicules routiers — Applications temps critiques du véhicule étendu (ExVe) — Exigences générales, définitions et méthodologie de classification des situations sous contrainte de temps liées à la sécurité routière et à la sûreté du véhicule étendu (RExVeS)



Reference number
ISO 23132:2020(E)

© ISO 2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of "ISO 23132:2020". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	3
5 Conventions and guidelines for specifying RExVeS-related requirements	3
6 The RExVeS methodology	3
6.1 General.....	3
6.2 Analysis of RExVeS-related scenarios.....	4
6.3 Classification of RExVeS-related time-constrained and safety-critical situations.....	5
6.3.1 Classification scheme.....	5
6.3.2 Classes of severity.....	6
6.3.3 Classes of probability of exposure.....	6
6.3.4 Classes of controllability.....	6
6.3.5 Determination of the priority class of a RExVeS-related time-constrained situation.....	7
6.3.6 Template for the description and priority class assignment of a RExVeS-related situation.....	8
7 Connected vehicle design prerequisites	8
Annex A (normative) Template for the description and priority class assignment of RExVeS-related situations (including safety-critical situations)	9
Annex B (informative) Example 1 of use of the RExVeS template	10
Annex C (informative) Example 2 of use of the RExVeS template	14
Annex D (informative) Example 3 of use of the RExVeS template	18
Annex E (informative) List of use-cases	21
Bibliography	23

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).

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).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This is a preview of "ISO 23132:2020". [Click here to purchase the full version from the ANSI store.](#)

Introduction

Preventing death and serious injury in road traffic crashes is a global priority. With the advent of vehicular data communications, road vehicles become connected vehicles, and safety is one of the key issues in the development of such road vehicles. ISO 26262-1 defines the vehicle safety as the absence of unreasonable risks that arise from malfunctions of the E/E system. The absence of unreasonable risk due to these potentially hazardous behaviours related to specific limitations (identified in ISO/PAS 21448^[Z]) is defined as the safety of the intended functionality (SOTIF). Functional safety (addressed by the ISO 26262 series) and SOTIF are distinct and complementary aspects of safety.

This document defines a complementary methodology for the prioritization of safety-related external communication use-cases to help to design extended vehicle time-critical interfaces described in the ISO 20077-1.

NOTE 1 ISO 20077-1 defines the concepts and terms related to the extended vehicle (ExVe), whereas ISO 20077-2 specifies general rules and basic principles that the manufacturer of the ExVe considers when elaborating its own design method.

NOTE 2 ISO 20077-1 defines an "extended vehicle" (ExVe) as an "entity, still in accordance with the specifications of the vehicle manufacturer, that extends beyond the physical boundaries of the road vehicle and consists of the road vehicle, off-board systems, external interfaces, and the data communication between the road vehicle and the off-board systems". Road vehicles without off-board systems and road vehicles equipped with telematics units are extended vehicles.

Recent developments in the field of connected vehicles, in various parts of the world, bring hope of being able to improve road safety, e.g. by reducing the number of road fatalities through collision avoidance cooperation. Connected vehicles taking into account ISO 20077-1 and ISO 20077-2 take their part in this global effort.

Due to the limited per design embedded resources, a priority management is necessary to apply these resources to the function and request with the highest criticality.

For these connected vehicles, the use of the "ExVe time critical interfaces" is firstly associated with safety-critical functions (e.g. emergency braking, steering) that are functions for which the priorities are based on a criticality concept.

It is important that all the functions using the "ExVe time critical interfaces" take into account the capabilities of the vehicles in which they are installed.

During the design phase, the connected vehicle behaviour regarding all safety-critical situations and its interactions with the external environment should be defined. Its implementation can be based on the methodology proposed in this document.