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BSI Standards Publication

**Information technology**  
**— Sensor networks:**  
**Sensor Network Reference**  
**Architecture (SNRA)**  
Part 5: Interface definitions

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**National foreword**

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**Information technology — Sensor  
networks: Sensor Network Reference  
Architecture (SNRA) —**

**Part 5:  
Interface definitions**

*Technologies de l'information — Réseaux de capteurs: Architecture de  
référence pour réseaux de capteurs —*

*Partie 5: Définitions des interfaces*



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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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.

ISO/IEC 29182 consists of the following parts, under the general title *Information technology — Sensor networks: Sensor Network Reference Architecture (SNRA)*:

- *Part 1: General overview and requirements*
- *Part 2: Vocabulary and terminology*
- *Part 3: Reference architecture views*
- *Part 4: Entity models*
- *Part 5: Interface definitions*
- *Part 7: Interoperability guidelines*

The following part is under preparation:

- *Part 6: Applications*

## Introduction

A wide range of applications has been proposed for sensor networks. In practice, however, sensor networks have been built and deployed for a relatively small number of applications. This is partly due to the lack of a business case for certain applications and partly due to technical challenges in building a non-trivial sensor network of reasonable complexity. The main reason for this impediment is multi-disciplinary expertise – such as sensors, communications and networking, signal processing, electronics, computing, and cyber security – is required to design a sensor network. Presently, the design process is so complex that one can leverage little from one sensor network design to another. It appears as if one has to start from almost scratch every time one wishes to design and deploy a sensor network. Yet, upon closer inspection, there are many commonalities in instantiations of sensor networks that realize various applications. These commonalities include similarities in the choice of network architecture and the entities/functional blocks that are used in the architecture.

The purpose of the ISO/IEC 29182 series is to

- provide guidance to facilitate the design and development of sensor networks,
- improve interoperability of sensor networks, and
- make sensor networks plug-and-play, so that it becomes fairly easy to add/remove sensor nodes to/from an existing sensor network.

The ISO/IEC 29182 series can be used by sensor network designers, software developers, and service providers to meet customer requirements, including any applicable interoperability requirements.

The ISO/IEC 29182 series comprises seven parts. Brief descriptions of these parts are given next.

ISO/IEC 29182-1 provides a general overview and the requirements for the sensor network reference architecture.

ISO/IEC 29182-2 provides definitions for the terminology and vocabulary used in the reference architecture.

ISO/IEC 29182-3 presents the reference architecture from various viewpoints, such as business, operational, system, technical, functional, and logical views.

ISO/IEC 29182-4 categorizes the entities comprising the reference architecture into two classes of physical and functional entities and presents models for the entities.

This part of ISO/IEC 29182 provides detailed information on the interfaces among various entities in the reference architecture.

ISO/IEC 29182-6 provides detailed information on the development of International Standardized Profiles.

ISO/IEC 29182-7 provides design principles for the reference architecture that take the interoperability requirements into account.

There are no requirements for compliance in the ISO/IEC 29182 series. Users should ensure that the sensor nodes, and the related sensor network, are compliant with the application or deployment governing body.





# Information technology — Sensor networks: Sensor Network Reference Architecture (SNRA) —

## Part 5: Interface definitions

### 1 Scope

This part of ISO/IEC 29182 provides the definitions and requirements of sensor network (SN) interfaces of the entities in the Sensor Network Reference Architecture and covers the following aspects:

- interfaces between functional layers to provide service access for the modules in the upper layer to exchange messages with modules in the lower layer;
- interfaces between entities introduced in the Sensor Network Reference Architecture enabling sensor network services and applications.

### 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.

ISO/IEC 29182-2, *Information technology — Sensor networks: Sensor Network Reference Architecture (SNRA) — Part 2: Vocabulary and terminology*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 29182-2 apply.

### 4 Abbreviated terms

SN	Sensor Network
SNRA	Sensor Network Reference Architecture
API	Application Programming Interface
I/F SNHL/BFL	Interface between Sensor Node Hardware Layer and Basic Functions Layer
I/F BFL/SL	Interface between Basic Functions Layer and Service Layer
I/F SL/AL	Interface between Service Layer and Application Layer
I/F CLM/AL-SL-BFL	Interface between Cross-Layer Management and Application Layer, Service Layer, and Basic Functions Layer
I/F CLM/AL	Interface between Cross-Layer Management and Application Layer
I/F CLM/SL	Interface between Cross-Layer Management and Service Layer
I/F CLM/BFL	Interface between Cross-Layer Management and Basic Functions Layer