

# SVENSK STANDARD

## SS-EN 16661:2015



Fastställt/Approved: 2015-06-14  
Publicerad/Published: 2015-06-16  
Utgåva/Edition: 1  
Språk/Language: engelska/English  
ICS: 17.100; 35.240.99; 43.180; 83.160.10

---

### **Vägfordon och däcktrycksmätare (TPG) – Interoperabilitet mellan däckinformationssystem (TIS) och TPG – Gränssnitt och krav**

### **Road vehicles and Tyre Pressure Gauges (TPG) – Interoperability between Tyre Information Systems (TIS) and TPG – Interfaces and Requirements**

This preview is downloaded from [www.sis.se](http://www.sis.se). Buy the entire standard via <https://www.sis.se/std-8014568>

# Standarder får världen att fungera

*SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.*

## Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

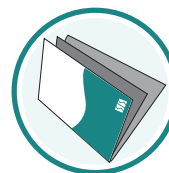
## Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

## Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

**Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på [www.sis.se](http://www.sis.se) eller ta kontakt med oss på tel 08-555 523 00.**



# Standards make the world go round

*SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.*

## Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

## Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

## Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

**If you want to know more about SIS, or how standards can streamline your organisation, please visit [www.sis.se](http://www.sis.se) or contact us on phone +46 (0)8-555 523 00**



Europastandarden EN 16661:2015 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 16661:2015.

The European Standard EN 16661:2015 has the status of a Swedish Standard. This document contains the official English version of EN 16661:2015.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

*Uppllysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.*

*Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.*

Denna standard är framtagen av kommittén för Däck och hjul, SIS/TK 218.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på [www.sis.se](http://www.sis.se) - där hittar du mer information.



EUROPEAN STANDARD

**EN 16661**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2015

---

ICS 17.100; 35.240.99; 43.180; 83.160.10

English Version

Road vehicles and Tyre Pressure Gauges (TPG) -  
Interoperability between Tyre Information Systems (TIS) and  
TPG - Interfaces and Requirements

Véhicules routiers et manomètres de pneumatiques (TPG)  
- Interopérabilité entre systèmes d'information de  
pneumatiques (TIS) et TPG - Interfaces et exigences

Reifendruck Management Systeme (TPMS) und  
Reifendruck Anzeigen - Interoperabilität zwischen TPMS im  
Fahrzeug und Füllsystemen (TPG) - Schnittstellen und  
Anforderungen

This European Standard was approved by CEN on 16 April 2015.

CEN 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 CEN-CENELEC Management Centre or to any CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>		Page
<b>Foreword</b> .....		<b>3</b>
<b>Introduction</b> .....		<b>4</b>
<b>1</b>	<b>Scope</b> .....	<b>5</b>
<b>2</b>	<b>Normative references</b> .....	<b>5</b>
<b>3</b>	<b>Conformance</b> .....	<b>5</b>
<b>4</b>	<b>Terms and definitions</b> .....	<b>6</b>
<b>5</b>	<b>Symbols and abbreviations</b> .....	<b>8</b>
<b>6</b>	<b>Requirements</b> .....	<b>9</b>
<b>6.1</b>	<b>Levels of interoperability</b> .....	<b>9</b>
<b>6.2</b>	<b>Required parameters provided by TIS, depending on level of interoperability</b> .....	<b>9</b>
<b>6.2.1</b>	<b>General</b> .....	<b>9</b>
<b>6.2.2</b>	<b>Basic parameters</b> .....	<b>10</b>
<b>6.2.3</b>	<b>Placard table information for vehicle platform</b> .....	<b>10</b>
<b>6.2.4</b>	<b>Vehicle-specific data for increasing the level of interoperability</b> .....	<b>13</b>
<b>6.2.5</b>	<b>Feedback information from the TPG to the TIS</b> .....	<b>17</b>
<b>7</b>	<b>Process requirements</b> .....	<b>17</b>
<b>8</b>	<b>Test conditions</b> .....	<b>18</b>
<b>9</b>	<b>Test methods</b> .....	<b>19</b>
<b>Annex A (normative) Parameter conversions</b> .....		<b>22</b>
<b>Annex B (normative) Tyre dimension and type</b> .....		<b>24</b>
<b>Bibliography</b> .....		<b>25</b>

## Foreword

This document (EN 16661:2015) has been prepared by Technical Committee CEN/TC 301 "Road vehicles", the secretariat of which is held by AFNOR.

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 December 2015, and conflicting national standards shall be withdrawn at the latest by December 2015.

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

This document has been prepared under mandate M/457 given to CEN by the European Commission and the European Free Trade Association.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

The general objective of this document is the capability of standardized interactivity between tyre pressure gauges (TPG) with tyre information systems (TIS), which provide all relevant data for tyre (re-)filling process for example placard information and/or the tyre pressure monitored via Tyre Pressure Monitoring System (TPMS).

EU regulation No 661/2009 is requiring TPMS on all newly homologated car types by November 2012 and on new cars by November 2014.

Increasing potential of TIS/TPMS and TPG, this document is part of the future European standards covering the interoperability of TPG with TIS, through standardized interfaces and data exchange formats, allowing advanced information management and exchange. The architecture is open and scalable to support from the most complex (full interoperability) to the simplest (fully manual) applications. Furthermore, the architecture considers relevant ways of communication. The communication standard allows the secure interfacing for data exchanges between the TPG and TIS.



## 1 Scope

This European Standard applies to the tyre pressure gauges (TPG) which operate using pressure equipment (devices used in fixed or mobile installations) to inflate the tyres of road using vehicles (M1 and M2 categories) and which may be capable of interacting with vehicles equipped with tyre pressure monitoring systems (TPMS) whereby the TPG may be steered by the TPMS/vehicle.

To set the correct tyre inflation, this European Standard defines requirements and processes for the interoperability of TPG with TPMS/vehicle, through standardized interfaces and data exchange formats allowing advanced information, management and control systems between TPG and TPMS/vehicle. The architecture is open and scalable to support the different levels of interoperability (from full interoperability to fully manual).

This European Standard does not define communication protocols (works specifically made under M/453 European mandate).

This European Standard may be applied to all TPG categories referenced in EN 12645.

The driver/operator is considered as being responsible for the validation of the parameters and tyre pressure.

This European Standard will be applicable upon development of Infrastructure solution (V2I-I2V communication solutions)

## 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.

ETSI DTS 101 556-2, *Intelligent Transport System (ITS) — Infrastructure to Vehicle (I2V) communication — Communication system specification to support application requirements for Tyre Pressure Monitoring System (TPMS)*

ISO 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

## 3 Conformance

In order to claim conformance with this European Standard, communication shall be established using accepted wireless communication standards (defined in ETSI DTS 101 556-2) and comply with the standards developed for the European mandate M/453 (Standardization mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies to support the interoperability of Co-operative systems for Intelligent Transport in the European Community).

It shall be able to demonstrate an open scalable architecture (from full interoperability to fully manual), depending on data availability defined herein.

## 4 Terms and definitions

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

**4.1**  
**tyre pressure gauge**  
**TPG**  
tyre pressure measuring instrument comprising all the elements from the tyre valve connector up to and including the display device

Note 1 to entry: The elements may include connector, hose, control device, measurement components, display device, software, reservoir, etc.

**4.2**  
**Vehicle-to-Infrastructure interface**  
V2I interface  
device mounted in the vehicle which exchanges data to the outside communication infrastructure

**4.3**  
**Infrastructure-to-Vehicle interface**  
I2V interface  
device of the outside communication infrastructure which exchanges data with the vehicle

**4.4**  
**Vehicle-to-Infrastructure and Infrastructure-to-Vehicle communication**  
V2I/I2V communication  
application of information and communication technologies that allows Vehicle-to-Infrastructure and Infrastructure-to-Vehicle communication

**4.5**  
**Tyre Information System**  
**TIS**  
in-vehicle functional system that contains tyre relevant in-vehicle data from TPMS and/or other sources (e.g. HMI, other systems, placard table, measured/available tyre data, etc.)

Note 1 to entry: It provides these data to the vehicle ITS station for interoperability.

**4.6**  
**interoperability**  
standardized information exchange between the tyre pressure measuring instrument and TIS

**4.7**  
**level of interoperability**  
process automation level to complete data exchange between TIS and tyre pressure measuring system

**4.8**  
**placard table**  
table that contains the recommended inflation pressures made/calculated by vehicle manufacturer and/or tyre manufacturer for the intended service conditions

**4.9**  
**load configuration**  
vehicle load (partly/fully load) including the mass of the vehicle itself and supported loads

#### 4.10

##### **Tyre Pressure Monitoring System (TPMS)**

any system fitted on a vehicle, able to evaluate the pressure of the tyres or the variation of the pressure over time and to transmit corresponding information to the user while the vehicle is running

Note 1 to entry: A TPMS is functionally composed of:

- sensing devices;
- information channel hardware;
- Central Processing Unit (CPU); and
- Human Machine Interface (HMI).

#### 4.11

##### **recommended cold tyre inflation pressure ( $p_{rec}$ )**

pressure recommended by the vehicle and/or the tyre manufacturer for each tyre position and for the intended service conditions of the vehicle

Note 1 to entry:  $p_{rec}$  is the same or higher than the minimum cold tyre inflation pressure.

Note 2 to entry: This data is usually defined on vehicle placard or on the owner's manual or stored into an available database (e.g. in an ECU in a vehicle, etc.)

#### 4.12

##### **proposed tyre pressure**

$p_{proposed}$   
inflation pressure proposed by the TPG

#### 4.13

##### **applied tyre pressure**

$p_{applied}$   
tyre pressure value indicated by TPG after the filling process is completed

#### 4.14

##### **cold tyre inflation pressure**

$p_{cold}$   
tyre pressure measured in absence of any pressure build-up due to tyre usage

#### 4.15

##### **warm tyre inflation pressure**

$p_{warm}$   
tyre pressure measured under the influence of pressure build-up due to tyre usage

#### 4.16

##### **intended vehicle service conditions**

load, speed and camber of a vehicle corresponding to the intended usage

#### 4.17

##### **Wheel Fitted Component (WFC)**

optional device that measures physical parameters and conveys information to (downlink) a central unit fitted in the vehicle body

Note 1 to entry: A WFC may also be equipped with an uplink channel which could carry the pressure on demand inputs or elsewhere.