

<b>STN</b>	<b>Cisterny na prepravu nebezpečných látok. Digitálne rozhranie pre zariadenie na rozpoznávanie výrobkov.</b>	<b>STN EN 14116+A1</b>
		69 8518

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/15

Obsahuje: EN 14116:2012+A1:2014

Oznámením tejto normy sa ruší  
STN EN 14116 (69 8518) z marca 2013

**120223**

English Version

## Tanks for transport of dangerous goods - Digital interface for product recognition devices for liquid fuels

Citernes destinées au transport de matières dangereuses -  
Interface numérique du dispositif de reconnaissance de  
produits pétroliers

Tanks für die Beförderung gefährlicher Güter - Digitale  
Schnittstelle für das Produkterkennungssystem für flüssige  
Kraft- und Brennstoffe

This European Standard was approved by CEN on 1 September 2012 and includes Amendment 1 approved by CEN on 7 August 2014.

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**

## Contents

Page

Foreword.....	4
Introduction .....	5
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms, definitions and abbreviations .....</b>	<b>6</b>
<b>3.1 Terms and definitions .....</b>	<b>6</b>
<b>3.2 Abbreviations .....</b>	<b>7</b>
<b>4 Functions .....</b>	<b>8</b>
<b>5 Design characteristics .....</b>	<b>9</b>
<b>5.1 General.....</b>	<b>9</b>
<b>5.2 Temperature range .....</b>	<b>10</b>
<b>5.3 Materials of construction .....</b>	<b>10</b>
<b>5.4 PRD .....</b>	<b>10</b>
<b>5.5 PID .....</b>	<b>11</b>
<b>5.5.1 General specification .....</b>	<b>11</b>
<b>5.5.2 Diode and ESD protection .....</b>	<b>12</b>
<b>5.6 Contact and insulation resistances .....</b>	<b>13</b>
<b>5.7 Electrical requirements for hoses.....</b>	<b>13</b>
<b>5.8 System architecture of MultiPID.....</b>	<b>14</b>
<b>5.9 Electrical design characteristic of MultiPID.....</b>	<b>14</b>
<b>5.9.1 Technical description of MultiPID .....</b>	<b>14</b>
<b>5.9.2 Modulation for the bi-directional communication .....</b>	<b>16</b>
<b>5.9.3 Message timing.....</b>	<b>17</b>
<b>6 Protocol structure.....</b>	<b>18</b>
<b>6.1 Telegram transmission sequences.....</b>	<b>18</b>
<b>6.2 Bit coding .....</b>	<b>19</b>
<b>6.3 Byte frame .....</b>	<b>20</b>
<b>6.4 Byte sequence in multibyte variables .....</b>	<b>20</b>
<b>6.5 Telegram.....</b>	<b>20</b>
<b>6.6 Message format.....</b>	<b>20</b>
<b>6.6.1 Format of messages #1 to #32 .....</b>	<b>20</b>
<b>6.6.2 Format of messages #33 to #255 .....</b>	<b>21</b>
<b>6.7 Message specification.....</b>	<b>21</b>
<b>6.7.1 Reserved messages .....</b>	<b>21</b>
<b>6.7.2 Other messages .....</b>	<b>21</b>
<b>6.7.3 Message #1: Product description and overfill status (depot/station to truck).....</b>	<b>21</b>
<b>6.7.4 Message #2 Location and product details (depot/station to truck).....</b>	<b>23</b>
<b>6.7.5 Message #3 Multi product loading arm (depot to truck).....</b>	<b>25</b>
<b>6.7.6 Message #4 Tank properties (station to truck).....</b>	<b>26</b>
<b>6.7.7 Message #5 Rack meter information (depot to truck).....</b>	<b>26</b>
<b>6.7.8 Message #6 Loading information (truck to depot).....</b>	<b>27</b>
<b>6.7.9 Message #7 Delivery information (truck to station) .....</b>	<b>28</b>
<b>6.7.10 Message #8 Station information (station to truck).....</b>	<b>29</b>
<b>6.7.11 Message #9 Acknowledge (depot to truck).....</b>	<b>30</b>
<b>6.7.12 Message #10 Return product information (truck to return station).....</b>	<b>30</b>
<b>6.7.13 Message #32 CRC 16.....</b>	<b>30</b>
<b>7 Tests.....</b>	<b>31</b>

<b>7.1</b>	<b>Type test</b> .....	<b>31</b>
<b>7.1.1</b>	<b>General</b> .....	<b>31</b>
<b>7.1.2</b>	<b>PID</b> .....	<b>31</b>
<b>7.1.3</b>	<b>PRD function test</b> .....	<b>34</b>
<b>7.1.4</b>	<b>Test results</b> .....	<b>36</b>
<b>7.2</b>	<b>Production test</b> .....	<b>36</b>
<b>7.2.1</b>	<b>General</b> .....	<b>36</b>
<b>7.2.2</b>	<b>PID static test</b> .....	<b>36</b>
<b>7.2.3</b>	<b>PID function test</b> .....	<b>36</b>
<b>7.2.4</b>	<b>PRD function test</b> .....	<b>36</b>
<b>7.2.5</b>	<b>Test results</b> .....	<b>36</b>
<b>8</b>	<b>Marking</b> .....	<b>37</b>
<b>9</b>	<b>Installation, operating and maintenance recommendations</b> .....	<b>37</b>
<b>Annex A</b>	<b>(informative) Manufacturer ID</b> .....	<b>38</b>
<b>Annex B</b>	<b>(normative) Calculation algorithm for CRC 16</b> .....	<b>39</b>
<b>Annex C</b>	<b>(informative) A-deviations</b> .....	<b>40</b>
<b>Annex D</b>	<b>(normative) Company code</b> .....	<b>41</b>
<b>D.1</b>	<b>Reason for the company code</b> .....	<b>41</b>
<b>D.2</b>	<b>Host of the list</b> .....	<b>41</b>
<b>D.3</b>	<b>Website</b> .....	<b>41</b>
<b>D.4</b>	<b>Rules</b> .....	<b>41</b>
<b>D.4.1</b>	<b>General</b> .....	<b>41</b>
<b>D.4.2</b>	<b>Preliminary registration</b> .....	<b>41</b>
<b>D.4.3</b>	<b>Access to “Oil Company code” table</b> .....	<b>41</b>
<b>D.4.4</b>	<b>Registration of a new company code</b> .....	<b>41</b>
<b>D.4.5</b>	<b>Automatic notification of changes</b> .....	<b>42</b>
	<b>Bibliography</b> .....	<b>43</b>

## Foreword

This document (EN 14116:2012+A1:2014) has been prepared by Technical Committee CEN/TC 296 "Tanks for transport of dangerous goods", 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 March 2015, and conflicting national standards shall be withdrawn at the latest by March 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 supersedes A1 EN 14116:2012 A1.

This document includes Amendment 1 approved by CEN on 2014-08-07.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 *deleted text* A1

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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

Product recognition, the subject of this European Standard, is the digital interface that allows product data and/or other information to be transferred between transport tanks and other installations.

The European Committee for Standardisation (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning hose communication methods given in Clause 4.

CEN takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the CEN that he is willing to negotiate licences either free of charge or under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with CEN. Information may be obtained from:

FMC Technologies

F.A. Sening GmbH

Regentstrasse 1

D-25474 Ellerbek

Germany

Phone: +49-4101 304-0

Fax: +49-4101-304-133 / 255

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. CEN shall not be held responsible for identifying any or all such patent rights.

CEN (<http://www.cen.eu/cen/WorkArea/IPR/Pages/default.aspx>) and CENELEC

(<http://www.cenelec.eu/membersandexperts/toolsandapplications/index.html>) maintain on-line lists of patents relevant to their standards. Users are encouraged to consult the lists for the most up to date information concerning patents.

## 1 Scope

This European Standard covers the digital interface at the product loading and/or discharge coupling which is used for the transfer of product related information and specifies the performance requirements, critical safety aspects and tests to provide compatibility of devices.

## 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.

EN 13616:2004, *Overfill prevention devices for static tanks for liquid petroleum fuels*

EN 15208, *Tanks for transport of dangerous goods — Sealed parcel delivery systems — Working principles and interface specifications*

EN 60079-0, *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0)*

EN 60079-11, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i" (IEC 60079-11)*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**