

# DIN EN 14116:2018-08 (E)

## Tanks for transport of dangerous goods - Digital interface for product recognition devices for liquid fuel s (includes Amendment :2018)

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Terms, definitions and abbreviations .....</b>	<b>6</b>
<b>3.1</b>	<b>Terms and definitions .....</b>	<b>6</b>
<b>3.2</b>	<b>Abbreviations .....</b>	<b>7</b>
<b>4</b>	<b>Functions .....</b>	<b>8</b>
<b>5</b>	<b>Design characteristics .....</b>	<b>9</b>
<b>5.1</b>	<b>General .....</b>	<b>9</b>
<b>5.2</b>	<b>Temperature range .....</b>	<b>10</b>
<b>5.3</b>	<b>Materials of construction .....</b>	<b>10</b>
<b>5.4</b>	<b>PRD .....</b>	<b>10</b>
<b>5.5</b>	<b>PID .....</b>	<b>11</b>
<b>5.5.1</b>	<b>General specification .....</b>	<b>11</b>
<b>5.5.2</b>	<b>Diode and ESD protection .....</b>	<b>12</b>
<b>5.6</b>	<b>Contact and insulation resistances .....</b>	<b>13</b>
<b>5.7</b>	<b>Electrical requirements for hoses .....</b>	<b>13</b>
<b>5.8</b>	<b>System architecture of MultiPID .....</b>	<b>14</b>
<b>5.9</b>	<b>Electrical design characteristic of MultiPID .....</b>	<b>14</b>
<b>5.9.1</b>	<b>Technical description of MultiPID .....</b>	<b>14</b>
<b>5.9.2</b>	<b>Modulation for the bi-directional communication .....</b>	<b>17</b>
<b>5.9.3</b>	<b>Message timing .....</b>	<b>18</b>
<b>6</b>	<b>Protocol structure .....</b>	<b>19</b>
<b>6.1</b>	<b>Telegram transmission sequences .....</b>	<b>19</b>
<b>6.2</b>	<b>Bit coding .....</b>	<b>20</b>
<b>6.3</b>	<b>Byte frame .....</b>	<b>21</b>
<b>6.4</b>	<b>Byte sequence in multibyte variables .....</b>	<b>21</b>
<b>6.5</b>	<b>Telegram .....</b>	<b>21</b>
<b>6.6</b>	<b>Message format .....</b>	<b>22</b>
<b>6.6.1</b>	<b>Format of messages #1 to #32 .....</b>	<b>22</b>
<b>6.6.2</b>	<b>Format of messages #33 to #255 .....</b>	<b>22</b>
<b>6.7</b>	<b>Message specification .....</b>	<b>22</b>
<b>6.7.1</b>	<b>Reserved messages .....</b>	<b>22</b>
<b>6.7.2</b>	<b>Other messages .....</b>	<b>22</b>
<b>6.7.3</b>	<b>Message #1: Product description and overfill status (depot/station to truck) .....</b>	<b>22</b>
<b>6.7.4</b>	<b>Message #2 Location and product details (depot/station to truck) .....</b>	<b>24</b>
<b>6.7.5</b>	<b>Message #3 Multi product loading arm (depot to truck) .....</b>	<b>26</b>
<b>6.7.6</b>	<b>Message #4 Tank properties (station to truck) .....</b>	<b>26</b>
<b>6.7.7</b>	<b>Message #5 Rack meter information (depot to truck) .....</b>	<b>27</b>
<b>6.7.8</b>	<b>Message #6 Loading information (truck to depot) .....</b>	<b>28</b>
<b>6.7.9</b>	<b>Message #7 Delivery information (truck to station) .....</b>	<b>29</b>
<b>6.7.10</b>	<b>Message #8 Station information (station to truck) .....</b>	<b>30</b>
<b>6.7.11</b>	<b>Message #9 Acknowledge (depot to truck) .....</b>	<b>31</b>

6.7.12	Message #10 Return product information (truck to return station) .....	31
6.7.13	Message #32 CRC 16 .....	31
7	Tests .....	32
7.1	Type test .....	32
7.1.1	General .....	32
7.1.2	PID .....	32
7.1.3	PRD function test .....	35
7.1.4	Test results .....	37
7.2	Production test .....	37
7.2.1	General .....	37
7.2.2	PID static test .....	37
7.2.3	PID function test .....	37
7.2.4	PRD function test .....	37
7.2.5	Test results .....	37
8	Marking .....	37
9	Installation, operating and maintenance recommendations .....	38
	Annex A (informative) Manufacturer ID .....	39
	Annex B (normative) Calculation algorithm for CRC 16 .....	40
	Annex C (informative) A-deviations .....	41
	Annex D (normative) Company code .....	42
D.1	Reason for the company code .....	42
D.2	Host of the list .....	42
D.3	Website .....	42
D.4	Rules .....	42
D.4.1	General .....	42
D.4.2	Preliminary registration .....	42
D.4.3	Access to "Oil Company code" table .....	42
D.4.4	Registration of a new company code .....	42
D.4.5	Automatic notification of changes .....	42
	Bibliography .....	43