

# DIN EN 16314:2013-09 (E)

## Gas meters - Additional functionalities

---

| <b>Contents</b>    |  | <b>Page</b> |
|--------------------|--|-------------|
| 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 abbreviated terms .....</b>  | <b>8</b>    |
| <b>3.1</b>         | <b>Terms and definitions .....</b>   | <b>8</b>    |
| <b>3.2</b>         | <b>Abbreviated terms .....</b>   | <b>9</b>    |
| <b>4</b>           | <b>General requirements .....</b>  | <b>10</b>   |
| <b>4.1</b>         | <b>Meter .....</b>   | <b>10</b>   |
| <b>4.2</b>         | <b>Meters with electronic index .....</b>  | <b>10</b>   |
| <b>4.3</b>         | <b>Suitability - AFD/Meter combination .....</b>   | <b>10</b>   |
| <b>4.4</b>         | <b>Types of additional functionality devices .....</b>                                       | <b>10</b>   |
| <b>4.5</b>         | <b>AFD1 .....</b>  | <b>11</b>   |
| <b>4.6</b>         | <b>AFD2 .....</b>  | <b>11</b>   |
| <b>4.7</b>         | <b>AFD3 .....</b>  | <b>11</b>   |
| <b>4.8</b>         | <b>Resistance to high ambient temperature .....</b>  | <b>12</b>   |
| <b>4.9</b>         | <b>Climatic environments .....</b>   | <b>12</b>   |
| <b>4.10</b>        | <b>Gas temperature range .....</b>   | <b>16</b>   |
| <b>4.11</b>        | <b>Safety Requirements .....</b>   | <b>16</b>   |
| <b>4.12</b>        | <b>Immunity to electromagnetic disturbances .....</b>  | <b>16</b>   |
| <b>4.13</b>        | <b>Immunity to electromagnetic disturbances for Meters / AFD's with external ports .....</b> | <b>20</b>   |
| <b>4.14</b>        | <b>Resistance to mishandling .....</b>   | <b>23</b>   |
| <b>4.15</b>        | <b>Resistance to storage temperature .....</b>   | <b>23</b>   |
| <b>4.16</b>        | <b>Ageing test .....</b>   | <b>24</b>   |
| <b>4.17</b>        | <b>Expected lifetime .....</b>   | <b>24</b>   |
| <b>5</b>           | <b>Security .....</b>  | <b>24</b>   |
| <b>5.1</b>         | <b>General .....</b>   | <b>24</b>   |
| <b>5.2</b>         | <b>Software, data and hardware security .....</b>  | <b>25</b>   |
| <b>5.3</b>         | <b>Firmware upgrade .....</b>  | <b>25</b>   |
| <b>5.4</b>         | <b>Software identification .....</b>   | <b>26</b>   |
| <b>6</b>           | <b>Power system .....</b>  | <b>26</b>   |
| <b>6.1</b>         | <b>General .....</b>   | <b>26</b>   |
| <b>6.2</b>         | <b>Battery .....</b>   | <b>26</b>   |
| <b>6.3</b>         | <b>Battery life .....</b>  | <b>27</b>   |
| <b>6.4</b>         | <b>Battery compartment .....</b>   | <b>27</b>   |
| <b>6.5</b>         | <b>Battery replacement .....</b>   | <b>28</b>   |
| <b>6.6</b>         | <b>Battery lifetime totaliser .....</b>  | <b>29</b>   |
| <b>6.7</b>         | <b>Voltage interruptions .....</b>   | <b>29</b>   |
| <b>6.8</b>         | <b>Operating voltage .....</b>   | <b>29</b>   |
| <b>7</b>           | <b>Additional Functionalities .....</b>  | <b>30</b>   |
| <b>7.1</b>         | <b>General .....</b>   | <b>30</b>   |
| <b>7.2</b>         | <b>Display .....</b>   | <b>30</b>   |
| <b>7.3</b>         | <b>Diagnostics .....</b>   | <b>30</b>   |
| <b>7.4</b>         | <b>Metrological influence .....</b>  | <b>31</b>   |

|  |   |    |
|--|---|----|
| 7.5  | AFD connections .....                         | 31 |
| 7.6  | Input to AFD .....                            | 31 |
| 7.7  | Output from AFD .....                         | 31 |
| 7.8  | Data storage .....                            | 32 |
| 7.9  | Time interval accuracy .....                  | 33 |
| 7.10   | Energy Calculation within the meter/AFD ..... | 34 |
| 7.11   | Tariffs .....                                 | 34 |
| 7.12   | Display/Human interface .....                 | 35 |
| 7.13   | Gas valve and System .....                    | 35 |
| 7.14   | Registers .....                               | 41 |
| 7.15   | Prepayment System with valve .....            | 41 |
| 7.16   | Prepayment system without a valve .....       | 42 |
| 7.17   | History of Consumption .....                  | 42 |
| 7.18   | Memory .....                                  | 42 |
| 8  | Marking .....                                 | 44 |
| 8.1  | Requirements .....                            | 44 |
| 8.2  | Test .....                                    | 44 |
| 9  | Documentation .....                           | 44 |
| 9.1  | General .....                                 | 44 |
| 9.2  | Declaration of conformity .....               | 45 |
| 9.3  | Technical documentation .....                 | 45 |
| 9.4  | Instruction manual .....                      | 45 |
| 10   | Environmental considerations .....            | 45 |
| Annex A (informative) Download software .....  |   | 46 |
| Annex B (informative) Implementation method - Conformity to the SM-CG Additional Functionalities ..... |   | 47 |
| Annex C (normative) Electronic index .....   |   | 50 |
| C.1  | General .....                                 | 50 |
| C.2  | Display .....                                 | 50 |
| C.3  | Display reset .....                           | 50 |
| C.4  | Test signal .....                             | 51 |
| C.5  | Non-volatile memory .....                     | 51 |
| C.6  | Flags and alarms information .....            | 52 |
| C.7  | Interfaces .....                              | 52 |
| C.8  | Ports .....                                   | 52 |
| C.9  | Durability .....                              | 53 |
| Annex D (normative) Valve type test plan .....   |   | 54 |
| D.1  | List of tests .....                           | 54 |
| D.2  | Endurance Test .....                          | 54 |
| D.3  | Toluene/iso-octane test .....                 | 54 |
| D.4  | Water Vapour Test .....                       | 57 |
| D.5  | Ageing Test .....                             | 59 |
| Bibliography .....   |   | 60 |