

Technical Bulletin 112

Developed with Industry

Title: Obtaining meter index readings for gas rating on electronic and SMART gas meters

Date issued: 7 December 2017

Note: This version of Technical Bulletin (TB) 112 replaces the version originally published 26 August 2016 which is now withdrawn. This version has been amended to revise the procedure for gas rating using the Itron RF1 Sv ZB meter (Appendix 5) and where appropriate, revised to ensure that it remains both current and relevant.

This Technical Bulletin has been developed to assist Gas Safe registered businesses/ engineers undertaking gas rate checks on all currently known electronic gas meters (including 'SMART' meters).

Introduction

Because of their complexities the current range of electronic gas meters have proven problematic when attempting to gas rate an appliance, as the gas meter displays do not immediately show the volume of gas passed by the meter. Each meter manufacturer has developed their own procedure to enable the gas rate process to be undertaken.

There a number of different manufacturers of electronic gas meters (including SMART meters) now supplying gas meters to UK Gas Suppliers. In this bulletin each manufactures' information is contained within individual appendices.

The electronic meters covered by this bulletin are:

- Landis+Gyr – [See Appendix 1 – Page 3](#)
- Secure Meters (UK) Formally PRI – [See Appendix 2 – Page 5](#)
- Elster – [See Appendix 3 – Page 7](#)
- Flonidan – [See Appendix 4 – Page 9](#)
- Itron RF1 Sv ZB – [See Appendix 5 – Page 11](#)

These will be added to over time, as more information becomes available.

Note 1: For details of current gas safety legislation, building legislation and industry standards for the geographical areas covered by Gas Safe Register, see the [Legislative, Normative & Informative Document List \(LNIDL\)^{\(4\)}](#) at: <https://www.gassaferegister.co.uk/sign-in/> - login and visit the Technical Information area.

Note 2: For general information about the process behind the development of Gas Safe Register Technical Bulletins and the expectations for all Stakeholders, see [TB 1000^{\(5\)}](#) at: <https://www.gassaferegister.co.uk/sign-in/> - login and visit the Technical Information area.

Bibliography

(1) *LNIDL - Gas Safe Register Legislative, Normative & Informative Document List*

(2) *TB 1000 – An introduction to Gas Safe Register Technical Bulletins*

Note: *Gas Safe Register Technical Bulletins and the Legislative, Normative & Informative Document List can be viewed at: <https://engineers.gassaferegister.co.uk> - login and visit the Technical Information area*

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Appendix 1 – Gas Rating Landis+Gyr series of electronic meters

When carrying out a gas rating of an appliance, the gas meter display does not immediately show the volume of gas passed by the meter. The entire range of Landis+Gyr gas meters are very similar in appearance other than some incorporate a pre-payment card slot towards the bottom of the meter and others do not (see Figure 1).

Procedure

This TB details a procedure, confirmed by Landis+Gyr that will need to be followed in order to be able to carry out successful gas rating of appliances

Identification

Landis + Gyr Gas Meters

The Landis + Gyr Libra series of meters are modular pre-payment or 'SMART' meters.

When inactive the meter display will be blank.

Figure 1 Showing typical Landis+Gyr Modular Meter. Note the card slot towards to bottom right of the meter shown. SMART Meters do not have the slot.



Display Screen Sequences.

Wake the meter by pressing the 'A' button, the display will illuminate and show 'Please Wait' before displaying its default screen – if the default display is not the meter index, it will be necessary to press button 'A' again until the index is displayed. Two different sequences are shown in Figure 2.

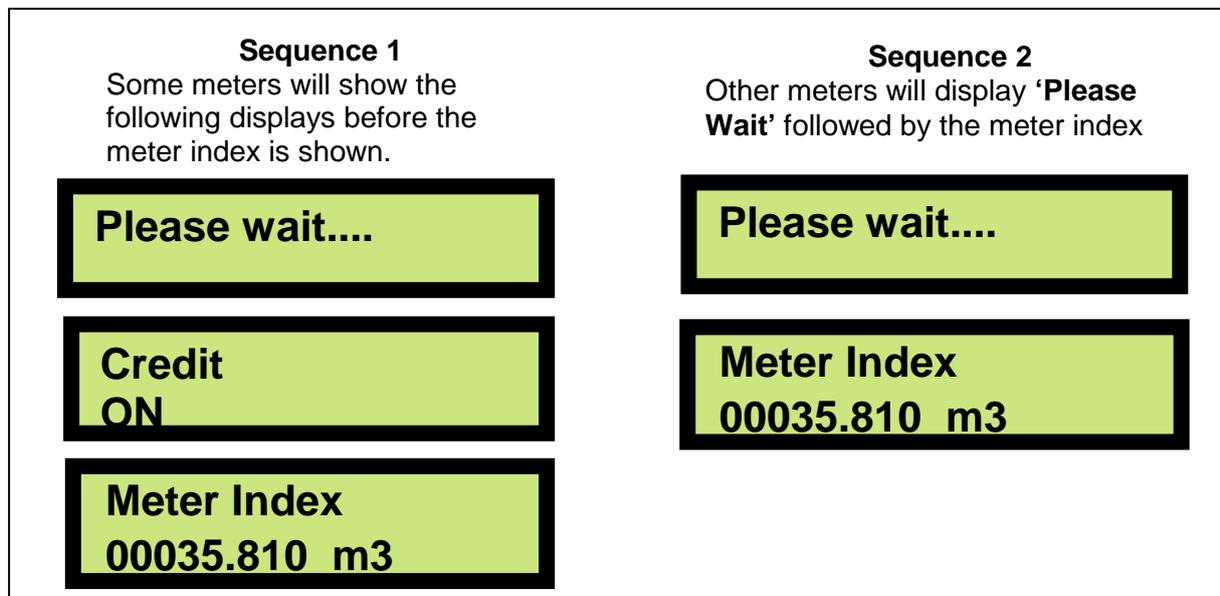


Figure 2. Showing different sequences of display dependent on the model of the meter

Note 1: If a screen is displayed which includes the word '**OFF**' rather than '**ON**', this indicates that either the meter credit has expired or the anti-tamper device has been triggered. In these circumstances no gas will flow unless the consumer is able to instigate emergency credit, or a tamper is reset by a representative of the gas supplier.

Gas rating an appliance

1. When conducting a gas rate test, start by running the appliance under test.
2. At the same time as starting the timing of the two minute test period, press button '**A**' on the meter to wake up the display. '**Please Wait**' is displayed on the screen (although there is a delay in displaying the meter index, the reading is taken from the time of the first press of the button). Press button '**A**' again until the meter index is shown in m³ (see Note 2). Make a note of the initial meter index reading.

Note 2: On some models of meter it will not be necessary to press the '**A**' button again after the '**Please Wait**' screen is displayed. On other models of meter it will be necessary to press the '**A**' button one or more times to pass the credit or debit display screen(s) so as to reach the meter index screen.

3. After a short delay the meter display will go blank.
4. At exactly 2 minutes (120 seconds) after commencing the test, press the '**A**' button to reawaken the display and show the final reading in m³ (the same number of presses of the '**A**' button as previous will be required to display the meter index reading).

Note 3: Although there is a delay in the recorded index (m³) being displayed after having pressed button '**A**' as many times as necessary to reach the meter index screen, the index reading that is displayed will have been recorded from the moment of the first press of button '**A**'.

5. Calculate the gas rate over the 2 minute period by subtracting the initial reading from the final reading. Then calculate the hourly gas rate of the appliance using the normal method.

Note 4: On rare occasions due to delays in the electronic module communicating with the base meter, the described test method could suggest that the gas appliance under test is overrated by a maximum of 4%. If this is suspected the test should be repeated.

Appendix 2 – Gas Rating Secure Meters (UK) - Liberty EG4v 10 SMART Meter

Procedure

This Appendix details a procedure, confirmed by Secure Meters (UK) that will need to be followed in order to be able to carry out successful gas rating of appliances with this type of gas meter.

Identification

Secure Liberty EG4v 10 gas meters

Note 1: When inactive the meter display will be blank.



Numerical keypad

Figure 1 Shows a typical Secure Liberty EG4v 10 SMART meter display, with numerical keypad to the right hand side of the display panel. (M13 shown in the seal area indicates the year of manufacturer of the meter i.e. 2013).

Gas rating an appliance

1. When conducting a gas rate test, start by running the appliance under test.
2. At the same time as starting the timing of the two minute test period, press button '9' on the meter keypad to wake up the display. Then immediately press the '9' button two further times (or 3 times simultaneously). The display initially shows 'VOLUME TST' for 2 seconds (see Figure 2) before displaying the meter index in m³ to 4 decimal places for a further 2 seconds (see Figure 3). Make a note of the initial meter index reading (see Note 2)

Figure 2 Initial 'VOLUME TST' display shown for 2 seconds after pressing the '9' button 3 times.



Figure 3 The display then shows the initial meter index (m³) in this case 52.3011 for a further 2 seconds.



Note 1: When a key is first pressed the display will be backlit for approximately 5 seconds. After showing the third in the sequence, the 'VOLUME TST' (high resolution register screen) and then the 'index' in m³ to 4 decimal places, the display will then cycle through a further 9 different displays before reverting to a blank display after approximately 35 seconds.

Note 2: The readings displayed are actually measured at the time of the first press of the ‘’ button, even though the display of the reading is delayed.

3. After  a short delay the meter display will go blank again.
4. At exactly 2 minutes (120 seconds) after commencing the test, re-press the ‘’ button three more times to reawaken the display and show the final reading in m³ to 4 decimal places (displayed immediately after showing ‘VOLUME TST’).
5. Calculate the gas rate over the 2 minute period by subtracting the initial reading from the final reading. Then calculate the hourly gas rate of the appliance using the normal method.

Note 3: If the energy monitor screen displays ‘**Low Credit**’, the monitor will also display the amount of credit available together. The SMART meter will alternatively display ‘**A**’- **ACCEPT** and ‘**B**’- **IGNORE**. To continue with gas rating an appliance the gas user will need to press button ‘**A**’ on the meter to accept emergency credit, or the e-credit button on the monitor. Unless emergency credit is accepted there may not be sufficient credit available to enable the completion of the gas rate check. When emergency credit has been activated, the letter ‘**P**’ in the corner of the energy monitor changes to ‘**E**’ confirming that emergency credit has been activated, but this may not be displayed instantaneously.

Note 4: If the screen includes the word ‘**OFF**’ rather than ‘**ON**’, this indicates that the meter has either run out of credit or the anti-tamper device has been triggered. If the credit in the meter is low, e-credit must be activated as in [Note 3](#) or the customer will have to vend into the meter, then follow the **PRESS ‘A’** & **PRESS ‘B’** as displayed on the meter, however, if there is credit in the meter and the meter is **OFF** due to tamper, no gas will flow until the ‘tamper’ has been reset by a representative of the gas supplier (contact gas supplier for further information).

Appendix 3 – Gas Rating Elster BK G4E

Procedure

This appendix details a procedure, confirmed by Elster that will need to be followed in order to be able to carry out successful gas rating of appliances with this type of gas meter.

Identification

Elster BK G4E



Figure 1 shows a typical Elster diaphragm smart meter. The meter uses a traditional base Kromschroder G4 meter with a smart module in place of the mechanical index.

The meter is capable of operating in both credit and prepayment modes.

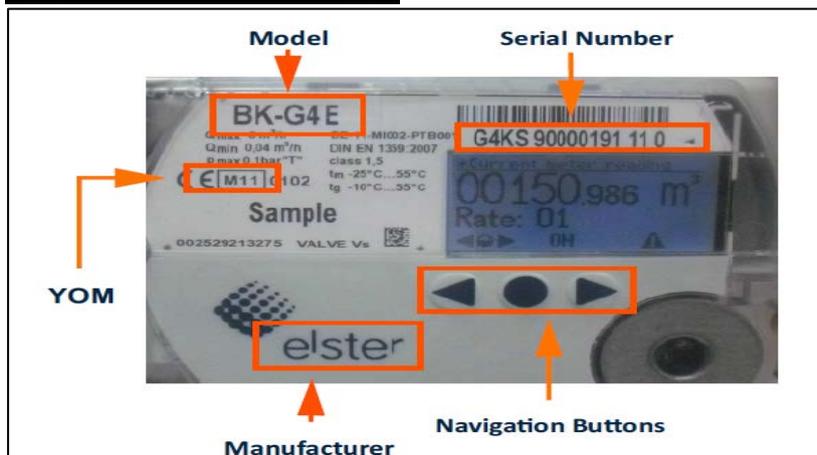
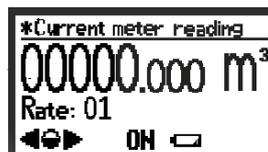


Figure 2 shows the smart module which is fitted to the Elster Smart meter

Gas rating an appliance

1. When conducting a gas rate test, start by running the appliance under test.
2. Press any of the navigation buttons to wake up the display.

The meter will display the cumulative reading on the first screen and the index is updated real-time. Within 30 seconds start the timing of the 2 minute test period. Make a note of the initial meter reading index at the start of the test.



3. After a short delay the meter display will go blank again.

Note 1: *When inactive the meter display will be blank. The cumulative read screen, will display for 30 seconds before the display will switch off.*

4. Within 30 seconds of the end of the 2 minutes (120 seconds) test period, press any of the navigation buttons to re-awaken the display. When the 2 minutes is complete make a note of the final meter reading index.
5. Calculate the gas rate over the 2 minute period by subtracting the initial reading from the final reading. Then calculate the hourly gas rate of the appliance using the normal method.

Prepayment Mode

Initially the Elster BK G4E meter will not have the option to be put into prepayment mode and can only act as a credit meter.

However, in the future, suppliers will have the option to upgrade the meter. When upgraded the initial screen will give the consumer/engineer the option to activate emergency credit as required.

It should be noted that once the consumer has used all of their Emergency Credit quota and the supply has been disabled then a top up will be required to bring the meter back into credit before the valve can be reopened.

Appendix 4 – Gas rating Flonidan G4SZV

Procedure

This appendix details a procedure, confirmed by Flonidan that will need to be followed in order to be able to carry out successful gas rating of appliances with this type of gas meter.

Identification



Figure 1 shows a typical Flonidan diaphragm smart meter.

The meter is badged as GE however the base meter is manufactured by Metrix and the smart module by Flonidan.

The meter contains a field changeable battery and a valve and is capable of operating in both credit and pre-payment modes.

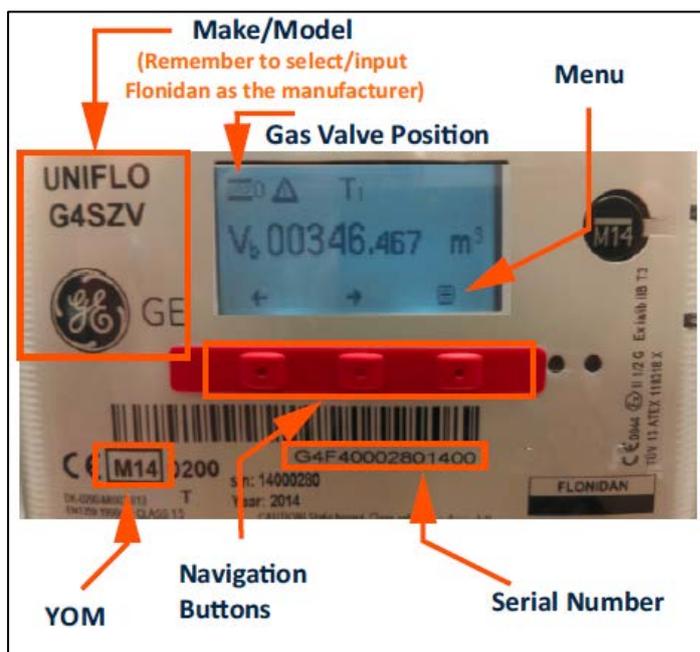


Figure 2 shows the smart module which is fitted to the Flonidan Smart meter

Identification of the Gas Valve Position

This meter displays a symbol in the top left hand corner of the display that indicates the position of the valve.

Before commencing with a gas rate the valve must be in the open position. If the valve is closed then the customer will either need to append a credit payment to the meter or contact their gas supplier for further guidance:

 O	Valve open
 B	Valve busy (opening or closing)
 S	Valve shut

Gas rating an appliance

1. When conducting a gas rate test, start by running the appliance under test.
2. Press any of the navigation buttons to wake up the display. The index is updated when one of the three buttons is pressed on the index plate. The meter will display the cumulative reading on the first screen and the index is updated on a 10 second cycle.

Make a note of the initial meter reading index at the start of the test.

3. The registered engineer must allow the display to go to sleep (after approximately 30 seconds).
4. When the timer reaches two minutes (120 seconds) press any button to re-awaken the display. This will show the updated meter index. When the 2 minutes is complete make a note of the final meter index reading.
5. Calculate the gas rate over the 2 minute period by subtracting the initial reading from the final reading. Then calculate the hourly gas rate of the appliance using the normal method.

Appendix 5 – Itron RF1 sV

Procedure

This appendix details a procedure, confirmed by Itron that will need to be followed in order to be able to carry out successful gas rating of appliances with this type of gas meter.

Identification

Figure 1



Figure 1 shows the Itron RF1 Smart meter using the standard Itron RF1 meter and Itron Smart index.

The meter can be used in both credit and prepayment modes.

Gas rating an appliance

1. When gas rating an appliance the appliance should be running as per the manufacturer's instructions.
2. Press any of the two buttons on the front of the meter (orange or blue). The meter will wake up and start to show the incrementing gas flow on screen "A0".

Note 1: If screen "A0" is not displaying this can be scrolled to by short pressing the orange button.

3. Within 30 seconds of waking the meter and at the next increment of the index whilst gas is flowing start the 2 minute test and note the meter reading index at the start of the test.
4. After 30 seconds the index will go blank but the meter is still measuring the flow taken during the test.
5. Within 30 seconds of the end of the 2 minutes (120 seconds) test period, press any of the two buttons (orange or blue) to re-awaken the display. This will show the updated meter index. When the 2 minutes is complete make a note of the final meter index reading.

Note 2: If screen "A0" is not displaying this can be scrolled to by short

pressing the orange button.

6. Calculate the gas rate over the 2 minute period by subtracting the initial reading from the final reading. Then calculate the hourly gas rate of the appliance using the normal method.

Prepayment mode

In prepayment mode press any of the two buttons (orange or blue) to wake the display.

The display sequence will start with "J0". Press the blue button twice to navigate to "J2" which is the Gas Volume Index. Registered businesses should ensure that there is at least 2 minutes worth of emergency credit available on the meter or the gas rate test will not be able to be completed.

Part of the valve opening cycle includes a leakage test so we have to wait for this internal test to complete before any appliance is turned on. Failure to do this will result in the immediate closure of the internal valve.

Once the credit is available, the valve is open and the internal leakage test has been accomplished the same procedure as the credit mode can be applied.