



Flow Monitor

B3100 Series



NOTICE

This tutorial is meant as a step-by-step guidance on how to use and set the automatic unit conversion. This tutorial is an addendum to the installation manual that came with the B3100.

This tutorial assumes that the B3100 is in a safe area.

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1 Description of the automatic unit conversion

The automatic unit conversion is a feature that helps you to avoid the different K-Factor calculations for the (accumulated) total and the flowrate. With the automatic unit conversion, you only need the test/calibration certificate that came with your flowmeter. On this certificate you will find the (average) K-Factor and the related measurement unit. To use the automatic unit conversion, you only need to enter the (average) K-Factor and the related measurement unit from the flowmeter certificate.

You need to preset the type of measurement unit: volume, mass or hand. Hand is selected for measurement units which are not supported by the automatic unit conversion.

1.1 The relation between the K-Factor and the automatic unit conversion

The K-Factor is a figure that represents the amount of pulses which relates to the quantity of a material that passes the flowmeter.

There are three different K-Factors:

- one for the flowmeter (as given on the certificate);
- one for reading of the (accumulated) total;
- one for the reading of the flowrate.

When another measurement unit is selected for the (accumulated) total or the flowrate, the automatic unit conversion uses the K-Factor of the flowmeter to, calculate the correct reading for the (accumulated) total and the flowrate separately.

NOTICE When the B3100 already shows a (accumulated) total and the measurement unit is changed, the present total is not recalculated into the new measurement unit. Therefore the total needs to be cleared before you enter a new measurement unit.

1.2 The relation between the K-Factor and the measurement unit set by hand

The K-Factor is a figure that represents the amount of pulses which relates to the quantity of a material that passes the flowmeter.

There are three different K-Factors:

- one for the flowmeter (as given on the certificate);
- one for reading of the (accumulated) total;
- one for the reading of the flowrate.

For the correct reading, you need to know the K-Factor of the flowmeter and the measurement unit for which the flowmeter is calibrated.

Example

For this example:

- the flowmeter has a K-Factor: 6624.605 and a measurement unit: m³.
- the measurement unit for (accumulated) total is required per US GAL.
- the unit conversion: 1 m³ equals 264.17 US GAL (1 US GAL equals 0.00378 m³).

The flowmeter generates 6624.605 pulses per m³. The selected unit for (accumulated) total is US GAL. For the calculation of the K-Factor for the (accumulated) total: the K-Factor 6624.605 with an unit m³ converted into US GAL gives $6624.605 : 264.17 = 25.077$.

2 How to setup the automatic unit conversion

This chapter explains the procedure how to setup the automatic unit conversion.

2.1 How to set the K-Factor (units) for the flowmeter

For easy access the procedure gives the action (what to do), the result (how the B3100 will respond) and a notice to give additional information to make the procedure more easy to do. For future reference, make a note of the settings.

2.1.1 The automatic unit conversion - AUTO-VOL and AUTO MAS mode

This procedure gives the information how to setup the AUTO-VOL or the AUTO-MAS mode. For volumetric units, use the AUTO-VOL mode. For mass units use, use the AUTO-MAS mode.

NOTICE This procedure assumes that the B3100 is not installed in the field.
 This procedure uses the factory default settings for the explanation. (AUTO-VOL [automatic unit conversion], L/min [flow rate] and m³ [Total, accumulated total]).
 This procedure assumes, as read from the flowmeter certificate, the flowmeter is calibrated for: 6624.605 [average K-factor], m³/hr [flow rate].

ACTION	RESULT	NOTICE
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> The SETUP indicator comes on continuously. 	-
2. Wait for the setup menu to show.	<ul style="list-style-type: none"> The setup menu shows. 	-
3. Press the ► button until the FLOWMETER menu shows.	<ul style="list-style-type: none"> The FLOWMETER menu shows. 	In this menu you can match the flowmeter with the B3100.
4. Press the ▲ button until the UNITS menu shows.	<ul style="list-style-type: none"> The UNITS menu shows. 	The UNITS menu is used to make a choice between the automatic unit conversion modes.
5. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can select the automatic unit conversion mode. When the K-factor of the flowmeter is known: <ul style="list-style-type: none"> For volumetric measurement select AUTO-VOL. For mass measurements select AUTO-MAS. For measurement units which are not supported by AUTO-VOL or AUTO-MASS, select HAND.
6. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The AUTO-VOL selection shows (the flowmeter is calibrated for m³/hr). 	For the explanation, the mode AUTO-VOL is selected.
7. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
8. Press the ▲ button until the UNIT menu shows.	<ul style="list-style-type: none"> the UNIT menu shows. 	-
9. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the measurement unit.

ACTION	RESULT	NOTICE
10. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The m³ selection shows (the flowmeter is calibrated for m³/hr). 	Read the unit from the flowmeter certificate and select the same measurement unit in this menu.

NOTICE If you cannot select the required measurement unit, you cannot use the automatic unit conversion. Best practice is to select HAND in the UNITS menu and make the required, different, K-factor calculations for the flowmeter, the (accumulated) total and the flow rate settings by hand.

ACTION	RESULT	NOTICE
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	For the explanation, the measurement unit m ³ is selected.
12. Press the ▲ button until the K-FACTOR menu shows.	<ul style="list-style-type: none"> the K-Factor menu shows. 	Read the (average) K-Factor from the flowmeter certificate and select the same K-Factor in this menu.
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the K-Factor as given on the flowmeter certificate.
14. Press the ▲ button and the ► button to make the required selection.	<ul style="list-style-type: none"> The selection 6624605 shows (decimals are not set yet). 	For the explanation, the K-Factor 6624605 is selected. The 3 decimals are not shown yet!
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
16. Press the ▲ button until the K-F DECS menu shows.	<ul style="list-style-type: none"> The K-Factor decimals menu shows. 	-
17. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer. Read the K-Factor decimals from the flowmeter certificate and select the same amount of decimals in this menu.
18. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0.003 shows. 	For the explanation, the decimals for the K-Factor are set to 3 decimals.
19. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
20. Press the ► button to view the K-FACTOR menu.	<ul style="list-style-type: none"> The K-Factor shows 6624.605. 	The decimal pointer shows as set in the K-F Decs menu.
21. Press the ▲ button until the FLOWMETER menu shows.	<ul style="list-style-type: none"> The FLOWMETER menu shows. 	-

2.1.2 The automatic unit conversion - HAND mode

This procedure gives the information how to setup the HAND mode. The HAND mode is selected when the required measurement unit is not supported by the automatic unit conversion.

ACTION	RESULT	NOTICE
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> The SETUP indicator comes on continuously. 	-
2. Wait for the setup menu to show.	<ul style="list-style-type: none"> The setup menu shows. 	-
3. Press the ► button until the FLOWMETER menu shows.	<ul style="list-style-type: none"> The FLOWMETER menu shows. 	In this menu you can match the flowmeter with the B3100.
4. Press the ▲ button until the UNITS menu shows.	<ul style="list-style-type: none"> The UNITS menu shows. 	The UNITS menu is used to make a choice between the automatic unit conversion modes.
5. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	For measurement units which are not supported, select HAND.
6. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The HAND selection shows. 	For the explanation, the mode HAND is selected.
7. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
8. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The FLOWMETER menu shows. 	

2.2 Set the reading for the (accumulated) total

This chapter explains the procedure how to setup the measurement unit for reading the B3100.

2.2.1 The (accumulated) total - AUTO-VOL and AUTO MAS mode

This setting does not influence the K-Factor measurement unit as set from the flowmeter certificate. The displayed measurement unit, as you selected, for the (accumulated) total is calculated from the settings in the flowmeter menu.

NOTICE This procedure is only applicable for the automatic unit conversion modes AUTO-VOL and AUTO-MASS.

ACTION	RESULT	NOTICE
9. Press the ► button until the TOTAL menu shows.	<ul style="list-style-type: none"> The TOTAL menu shows 	Now you can set the TOTAL settings, but not the K-Factor Factor (decimals) because these settings are controlled by the FLOWMETER settings.
10. Press the ▲ button until the UNIT menu shows.	<ul style="list-style-type: none"> The UNIT menu shows. 	-
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the measurement unit for display purpose only. The automatic unit conversion takes care for the correct reading with respect to the flowmeter calibration.

ACTION	RESULT	NOTICE
12. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection US GAL shows. 	For the explanation, the measurement unit for the (accumulated) total is set to US GAL.
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	The Flowmeter (K-factor) unit m ³ is automatically converted to show the total in US Gallons.
14. Press the ▲ button until the DECIMALS menu shows.	<ul style="list-style-type: none"> The DECIMALS menu shows. 	-
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer for display purposes only.
16. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0.1 shows. 	For the explanation, the decimals for the (accumulated) total are set to 1 decimal.
17. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

NOTICE The K-factor and the K-factor decimals for the (accumulated) total shows as AUTO because the automatic unit conversion controls these parameters.

NOTICE If 7 digits is not sufficient to show the (accumulated) total, you can multiply the reading by x10, x100, etc. This multiplication factor is set in the next menu.

ACTION	RESULT	NOTICE
18. Press the ▲ button until the FACTOR X menu shows.	<ul style="list-style-type: none"> The FACTOR X menu shows. 	-
19. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the multiplication factor for the (accumulated) total which require more than 7 digits.
20. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 10 shows. 	For the explanation, the multiplication factor for the (accumulated) total is set to 10x.
21. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

2.2.2 The (accumulated) total - HAND mode

This procedure gives the information how to setup the HAND mode. The HAND mode is selected when the required measurement unit is not supported by the automatic unit conversion.

NOTICE This procedure is applicable for the HAND mode where the K-Factor for the (accumulated) total is set by hand. For the explanation, US GAL is the selected measurement unit for the (accumulated) total.

ACTION	RESULT	NOTICE
1. Press the PROG button until the TOTAL menu shows.	<ul style="list-style-type: none"> The TOTAL menu shows. 	In this menu you can setup the reading for the (accumulated) total.
2. Press the ▲ button until the UNIT menu shows.	<ul style="list-style-type: none"> the UNIT menu shows. 	-
3. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the measurement unit for the (accumulated) total. A change of the measurement unit requires also a new calculation of the K-Factor for the (accumulated) total. The calculation is not done automatically!
4. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection US GAL shows. 	For the explanation, the measurement unit for the (accumulated) total are set to US GAL.
5. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
6. Press the ▲ button until the DECIMALS menu shows.	<ul style="list-style-type: none"> The DECIMALS menu shows. 	-
7. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer for display purposes only.
8. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0 shows. 	For the explanation, the decimals for the (accumulated) total are set to 0 decimals.
9. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
10. Press the ▲ button until the K-FACTOR menu shows.	<ul style="list-style-type: none"> The K-FACTOR menu shows. 	Calculate the K-Factor for the (accumulated) total by hand and make a note.

ACTION	RESULT	NOTICE
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the calculated K-Factor for the (accumulated) total.
12. Use the ▲ button and the ► button to enter the required data.	<ul style="list-style-type: none"> The K-FACTOR menu shows 25.077. 	For the explanation, the K-Factor 6624.605 with an unit m ³ converted into US GAL gives $6624.605 : 264.17 = 25.077$.
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	
14. Press the ▲ button until the K-F DECS menu shows.	<ul style="list-style-type: none"> The K-Factor decimals menu shows. 	-
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer.
16. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0 shows. 	For the explanation, the decimals for the K-Factor are set to 0 decimals.
17. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

NOTICE If 7 digits is not sufficient to show the (accumulated) total, you can multiply the reading by x10, x100, etc. This multiplication factor is set in the next menu.

ACTION	RESULT	NOTICE
18. Press the ▲ button until the FACTOR X menu shows.	<ul style="list-style-type: none"> The FACTOR X menu shows. 	-
19. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the multiplication factor for the (accumulated) total which require more than 7 digits.
20. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 10 shows. 	For the explanation, the multiplication factor for the (accumulated) total is set to 10x.
21. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

2.3 Set the reading for the flow rate

This chapter explains the procedure how to setup the measurement unit for reading the B3100.

2.3.1 The flow rate - AUTO-VOL and AUTO MAS mode

This setting does not influence the K-Factor measurement unit as set from the flowmeter certificate. The displayed measurement unit, as you selected, for the flow rate is calculated from the settings in the flowmeter menu.

NOTICE This procedure is only applicable for the automatic unit conversion modes AUTO-VOL and AUTO-MASS.

ACTION	RESULT	NOTICE
1. Press the ► button until the FLOWRATE menu shows.	<ul style="list-style-type: none"> The FLOWRATE menu shows 	Now you can set the FLOWRATE settings, but not the K-Factor (decimals) because these settings are controlled by the FLOWMETER settings.
2. Press the ▲ button until the UNIT menu shows.	<ul style="list-style-type: none"> The UNIT menu shows. 	-
3. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the measurement unit for display purpose only..
4. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection US GAL shows. 	For the explanation, the measurement unit for the flow rate is set to US GAL.
5. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	The Flowmeter (K-factor) unit m ³ is automatically converted to show the total in US Gallons.
6. Press the ▲ button until the TIME menu shows.	<ul style="list-style-type: none"> The TIME menu shows. 	-
7. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the time unit for display purpose only.
8. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection /sec shows. 	For the explanation, the time unit for the flow rate is set to /sec.
9. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	The flow rate is shown in the selected period of time.
10. Press the ▲ button until the DECIMALS menu shows.	<ul style="list-style-type: none"> The DECIMALS menu shows. 	-
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer for display purposes only.
12. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0.1 shows. 	For the explanation, the decimals for the flow rate are set to 1 decimal.
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

NOTICE The K-Factor and the K-Factor decimals for the flow rate shows as AUTO because the automatic unit conversion controls these parameters.

ACTION	RESULT	NOTICE
14. Press the ▲ button until the CALCULATE menu shows.	<ul style="list-style-type: none"> • The CALCULATE menu shows. 	The flow rate is calculated by measuring the time between a number of pulses. The more pulses, the more accurate the flow rate will be but also the response time will decrease.
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator comes on. 	Now you can set the number of pulses which determines the accuracy of the flow rate calculation and indication. For acceptable update rates, for low frequencies (<10Hz), use a setting below 10 pulses and for high frequencies (>1kHz), use a setting above 50 pulses.
16. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> • The selection PLS 10 shows. 	For the explanation, the flow rate calculation is set to PLS 10 for 10 pulses per measurement unit.
17. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator goes off. • The selection is confirmed. 	-
18. Press the ▲ button until the CUT-OFF menu shows.	<ul style="list-style-type: none"> • The CUT-OFF menu shows. 	When during the cut-off time no pulses are received, the B3100 will show a zero flow. This prevents the B3100 to continuously show the last calculated flow rate while there is no flow anymore.
19. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator comes on. 	Now you can set the cut-off time in seconds.
20. Press the ▲ button and the ► button to make the required selection.	<ul style="list-style-type: none"> • The selection 15.0 shows. 	For the explanation, the cut-off time is set to 15 seconds.
21. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator goes off. • The selection is confirmed. 	-
22. Press the PROG button until the operator menu shows.	<ul style="list-style-type: none"> • The setup is completed. 	-

2.3.2 The flow rate - HAND mode

This procedure gives the information how to setup the HAND mode. The HAND mode is selected when the required measurement unit is not supported by the automatic unit conversion.

NOTICE This procedure is applicable for the HAND mode where the K-Factor for the flow rate is set by hand. For the explanation, US GAL is the selected measurement unit for the flow rate.

ACTION	RESULT	NOTICE
1. Press the PROG button until the FLOWRATE menu shows.	<ul style="list-style-type: none"> The FLOWRATE menu shows. 	In this menu you can setup the reading for the flow rate.
2. Press the ▲ button until the UNIT menu shows.	<ul style="list-style-type: none"> the UNIT menu shows. 	-
3. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the measurement unit for the flow rate. A change of the measurement unit requires also a new calculation of the K-Factor for the flow rate. The calculation is not done automatically!
4. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection US GAL shows. 	For the explanation, the measurement unit for the flow rate is set to US GAL.
5. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
6. Press the ▲ button until the TIME menu shows.	<ul style="list-style-type: none"> The TIME menu shows. 	-
7. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the time unit for display purpose only.
8. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection /sec shows. 	For the explanation, the time unit for the flow rate is set to /sec.
9. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	The flow rate is shown in the selected period of time.
10. Press the ▲ button until the DECIMALS menu shows.	<ul style="list-style-type: none"> The DECIMALS menu shows. 	-
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer for display purposes only.
12. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0.1 shows. 	For the explanation, the decimals for the flow rate are set to 1 decimal.
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

ACTION	RESULT	NOTICE
14. Press the ▲ button until the K-FACTOR menu shows.	<ul style="list-style-type: none"> The K-FACTOR menu shows. 	Calculate the K-Factor for the (accumulated) total by hand and make a note.
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the calculated K-Factor for the (accumulated) total.
16. Use the ▲ button and the ► button to enter the required data.	<ul style="list-style-type: none"> The K-FACTOR menu shows 25.077. 	For the explanation, the K-Factor 6624.605 with an unit m ³ converted into US GAL gives $6624.605 : 264.17 = 25.077$.
17. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	
18. Press the ▲ button until the K-F DECS menu shows.	<ul style="list-style-type: none"> The K-Factor decimals menu shows. 	-
19. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer.
20. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0 shows. 	For the explanation, the K-Factor decimals are set to 0 decimals.
21. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
22. Press the ▲ button until the CALCULATE menu shows.	<ul style="list-style-type: none"> The CALCULATE menu shows. 	The flow rate is calculated by measuring the time between a number of pulses. The more pulses, the more accurate the flow rate will be but also the response time will decrease.
23. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the number of pulses which determines the accuracy of the flow rate calculation and indication. For acceptable update rates, for low frequencies (<10Hz), use a setting below 10 pulses and for high frequencies (>1kHz), use a setting above 50 pulses.
24. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection PLS 10 shows. 	For the explanation, the flow rate calculation is set to PLS 10 for 10 pulses per measurement unit.
25. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-
26. Press the ▲ button until the CUT-OFF menu shows.	<ul style="list-style-type: none"> The CUT-OFF menu shows. 	When during the cut-off time no pulses are received, the B3100 will show a zero flow. This prevents the B3100 to continuously show the last calculated flow rate while there is no flow anymore.

ACTION	RESULT	NOTICE
27. Press the PROG button momentarily.	<ul style="list-style-type: none">• The PROG indicator comes on.	Now you can set the cut-off time in seconds.
28. Press the ▲ button and the ► button to make the required selection.	<ul style="list-style-type: none">• The selection 15.0 shows.	For the explanation, the cut-off time is set to 15 seconds.
29. Press the PROG button momentarily.	<ul style="list-style-type: none">• The PROG indicator goes off.• The selection is confirmed.	-
30. Press the PROG button until the operator menu shows.	<ul style="list-style-type: none">• The setup is completed.	-

3 The linearization function

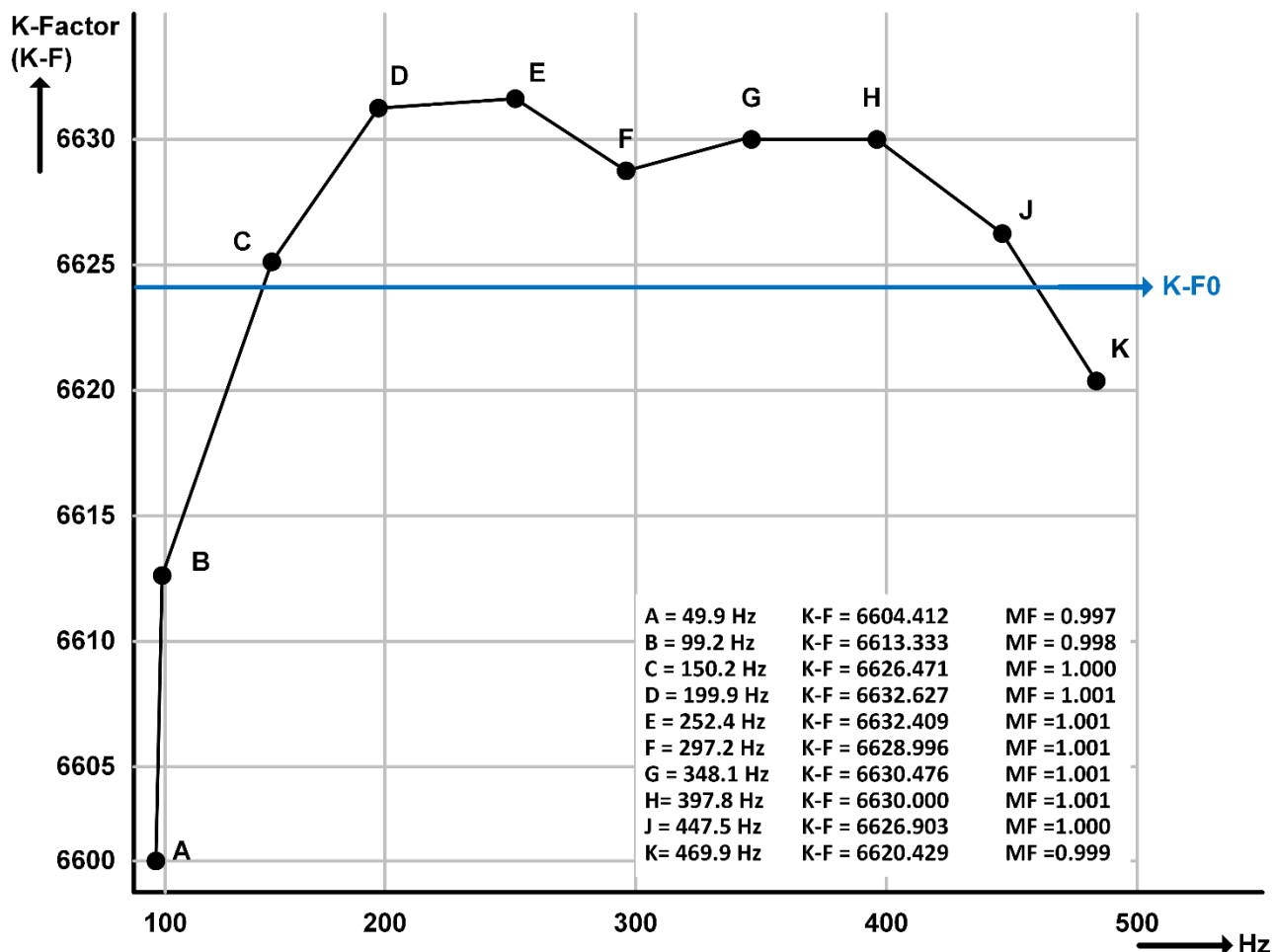
This chapter gives an description and explains the procedure how to setup the linearization.

3.1 Description of the linearization

The linearization function is used to make the reading of the (accumulated) total, the flow rate, the analog and the pulse output more accurate. The linearization points, defined by the frequency and meter factor, are programmed into the B3100 to follow the flowmeter K-Factor curve as close as possible. The required frequency and meter factors are normally listed in the test or calibration certificate of the flowmeter.

Best practice is to enter the linearization points from the lowest frequency upwards, but it is not necessary.

Refer to the diagram, the flow K-Factor curve in between the linearization points is interpolated (calculated) by the software of the B3100.



3.2 How to use the linearization function

This procedure gives the information how to setup the linearization function. The linearization function is applicable for all modes of the automatic unit conversion, AUTO-VOL, AUTO-MAS and HAND.

3.2.1 Setup the linearization function

ACTION	RESULT	NOTICE
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> • The SETUP indicator comes on continuously. • The setup menu shows. 	-
2. Press the ► button until the LINEARIZE menu shows.	<ul style="list-style-type: none"> • The LINEARIZE menu shows. 	In this menu you can setup the linearization or disable the linearization function to save battery power (if applicable).
3. Press the ▲ button to make the first selection.	<ul style="list-style-type: none"> • The first linearization point shows. 	-
4. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator comes on. • The FR display line becomes active. 	Now you can enter the frequency of the first linearization point.
5. Press the ▲ button and the ► button to make the required selection.	<ul style="list-style-type: none"> • The frequency 49.9 shows. 	For the explanation, the frequency of the linearization point is set to 49.9 Hz.
6. When the frequency is entered, press the ► button to make the required selection.	<ul style="list-style-type: none"> • The PROG indicator comes on. • The Meter Factor (MF) display line becomes active. 	Now you can enter the meter factor of the first linearization point. The MF has a fixed decimal point that you cannot change.
7. Press the ▲ button and the ► button to make the required selection.	<ul style="list-style-type: none"> • The meter factor 0.997 shows. 	For the explanation, the meter factor is set to 0.997.
8. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator goes off. • The selection is confirmed. 	-
9. Press the ▲ button to make the second selection.	<ul style="list-style-type: none"> • The second linearization point shows. 	-
10. Repeat the steps as you did for the first linearization point until you have programmed the required linearization points.	<ul style="list-style-type: none"> • The required linearization points are programmed. 	It is not necessary to program all of the available linearization points. Best practice is to enter the linearization points in sequence, but it is not necessary.
11. Press the PROG button momentarily.	<ul style="list-style-type: none"> • The PROG indicator goes off. • The last selection is confirmed. 	-
12. Press the ▲ button until the DECIMALS menu shows.	<ul style="list-style-type: none"> • The DECIMALS menu shows. 	-

ACTION	RESULT	NOTICE
13. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can set the decimal pointer for the frequency only. This decimals setting does not change the MF setting.
14. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The selection 0.1 shows. 	For the explanation, the decimals for the frequency (FR) of the linearization points are set to 1 decimal.
15. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

3.2.2 Disable the linearization function

NOTICE Best practice is to disable the linearization function if the function is not used.

ACTION	RESULT	NOTICE
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> The SETUP indicator comes on continuously. The setup menu shows. 	-
2. Press the ► button until the LINEARIZE menu shows.	<ul style="list-style-type: none"> The LINEARIZE menu shows. 	In this menu you can setup the linearization or disable the linearization function to save battery power (if applicable).
3. Press the ▲ button until the LINEAR menu shows.	<ul style="list-style-type: none"> The LINEAR menu shows. 	-
4. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator comes on. 	Now you can enable or disable the linearization function.
5. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> The DISABLE selection shows. 	For the explanation, DISABLE is selected.
6. Press the PROG button momentarily.	<ul style="list-style-type: none"> The PROG indicator goes off. The selection is confirmed. 	-

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