

## Technical Data and Operating Instructions

### **GS 8 B**

### **Calibrated Flow Simulator**

... for Electromagnetic Flowmeters



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## General Operational Safety Advice

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Incorrect connection of the GS 8 B or other test equipment may cause damage to the converter or to the GS 8 B. Use of the GS 8 B with converters that are not identified as compatible may cause damage to the GS 8 B instrument. Subsequent safety risks from the operation of the GS 8 B or of any damaged converters could not then be excluded.



**CAUTION:** Only qualified personnel familiar with KROHNE converter electrical connection requirements should make the GS 8 B cable connections to the meter systems

**The GS 8 B is not approved for hazardous areas**

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## Product Liability & Warranty

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Responsibility for suitability and intended use of this instrument rests solely with the user. Improper installation and operation may lead to loss of warranty. In addition, the general conditions of sale are applicable and are the basis for the purchase contract.

If the instrument needs to be returned to KROHNE for calibration or service, please contact your local KROHNE representative for a Return Materials Authorization (RMA).

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## Items Included

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- GS 8 B calibrated flow simulator
- Connecting cable M for remote installations (with separate terminated pig-tail ends)
- Connecting cable Z for older converter compact meter installations (with two modular in-line plug connections & separate ground lead)
- Connecting cable Z3 (with ONE modular in-line plug connections & separate ground lead) - for use with IFC 100 & IFC 300 Compact and Wall mount converters\*
- Carry/storage bag (bag is designed to house the GS 8 B & store up to two of the three supplied cables)
- GS 8 B technical data & operating instructions
- GS 8 B calibration certificate
- CD w/ electronic copy of manual & computational software

**\* Note:**

- The "Z3" GS 8 B interface cable now included as standard equipment.
- Extra/replacement M, Z, Z3 cables and parts etc as needed may ordered separately. Please contact your local KROHNE representative.
- Please visit - [http://www.krohne.com/Flow\\_Simulator\\_GS\\_8\\_B.11449.0.html](http://www.krohne.com/Flow_Simulator_GS_8_B.11449.0.html) web site for free updates, downloads of software and manuals as they are made available.

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## Table of Contents

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<b>General Operational Safety Advice</b>	<b>2</b>
<b>Product Liability &amp; Warranty</b>	<b>2</b>
<b>Items Included</b>	<b>2</b>
<b>1 GS 8 B Introduction</b>	<b>3</b>
1.1 Introduction	3
1.2 Compatible Converters	3
1.3 Incompatible Converters	4
1.4 Required Test Equipment & Materials	4
1.5 Instrument Configuration	4
1.6 Operational Description	5
<b>2 GS 8 B Connections &amp; Operation</b>	<b>6</b>
2.1 Connections	6
2.1.1 Remote Installation Connections	6
2.1.2 Compact Installation Connections	6
2.1.3 IFC 100 C - Compact Installation Connections	7
2.1.4 IFC 100 W - Wall Mount Installation Connections	7
2.1.5 IFC 300 C - Compact Installation Connections	8
2.1.6 IFC 300 W - Wall Mount Installation Connections	8
2.2 Testing The Signal Converter	9
Table 1 Scaling Constants (K) for Given Volume, Time & Diameter Units	10
Table 2 Nominal Range Values (Y) for Range Switch Positions	10
<b>3 Technical Data</b>	<b>12</b>
<b>Notes</b>	<b>13</b>

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## 1 GS 8 B Introduction

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### 1.1 Introduction

The GS 8 B calibrated flow simulator provides calibrated feedback to the electromagnetic meter converter that simulates specific calibrated flow conditions in place of the meter flow tube. It has 5 selectable simulated flow range settings plus zero flow and is usable with many of the KROHNE 4-wire converters. When connected to the converter in place of the flow tube, it provides a precise, consistent signal to the converter that is representative of specific flow conditions.

### 1.2 Compatible Converters

The GS 8 B can be used with the following KROHNE electromagnetic flowmeter converters for verification of converter and electronic systems operation:

- ✓ **IFC 100 C/W** (IFC 100/300 Note - Compact "C" versions use the Z3 interface cable. The Z3 cable also expedites connections for "W" converter versions. The "F" version utilizes the M Pig-Tail cable as can also the "W" versions, if so desired.)
- ✓ **IFC 300 C/F/W**

- ✓ IFC 010, IFC 020, IFC 090, IFC 110, IFC 080
- ✓ IFC 110 PF & SC 100 PF Provided that the level electronics are disconnected between the converter & sensor during simulation (forces full pipe condition for converter). Use IFC 110 & SC 100 selection as converter.
- ✓ All KROHNE signal converters where reference is made to the GS 8 in their installation & operating instructions (Except as noted in Section 1.3 Incompatible Converters).

- ✓ SC 100 A, AS
- ✓ SC 80 A, AS

- ✓ T 900 F, 900 F/NF, T 900 E F 200

### 1.3 Incompatible Converters

The GS 8 B is **NOT** suitable for the following older KROHNE signal converters:

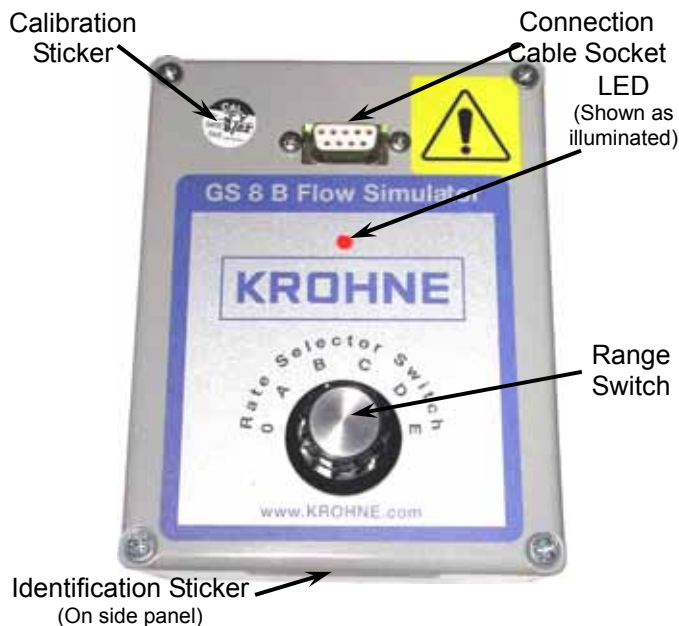
- ✗ IFC 040, IFM 4042
- ✗ TIV 50, TIV 60
- ✗ SC 150

### 1.4 Required Test Equipment & Materials

The following test equipment and materials are required for the procedures covered in this manual:

- GS 8 B calibrated flow simulator
- Milliammeter
  - Accuracy class: 0.1 mA
  - Input impedance: < 800 Ohm
  - Range: 0 to 20 mA
- Electronic frequency counter
  - Input resistance: ≥ 1 kOhm
  - Range: 0 to 10 kHz
  - Time base: ≥ 1 second
- Pocket calculator or computer with appropriate spreadsheet program
- Installation & operating instructions for the signal converter under test

### 1.5 Instrument Configuration



#### Cable M

(Identified by #1 legend on silver connector shell)

Separate terminated pig-tail ends plus ground clip  
 (For IFC 300 F, IFC 010 F, IFC 020 F, IFC 090 F, IFC 110, IFC 080 F, SC 100 A, SC 100 AS, T 900, F 200, & SC 80 A, AS F  
 Optional for IFC 100 W & IFC 300 W)



#### Cable Z

(Identified by #2 legend on silver connector shell)

Three modular in-line plug connections & separate ground clip  
 (For IFC 010 K, IFC 020 K, IFC 090 K, IFC 080 K, SC 80 A, AS K)

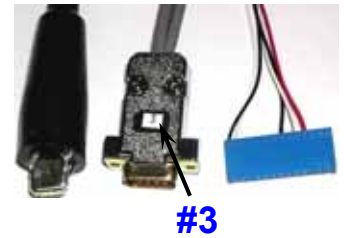


### Cable Z3

(Identified by #3 legend on silver connector shell)

Single in-line plug connection  
& separate ground clip

(For IFC 100 C & IFC 100 W &  
IFC 300 C & IFC 300 W)

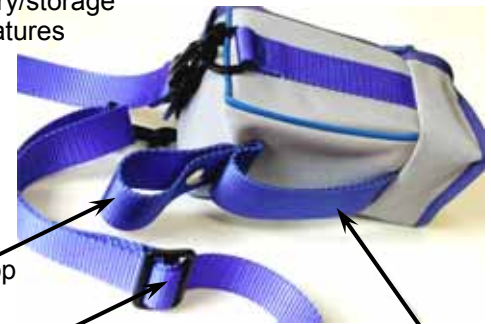


GS 8 B in  
carry/storage bag



GS 8 B cable storage in  
carry/storage bag (up to  
two cables)

GS 8 B carry/storage  
bag features



Belt loop

Detachable,  
adjustable shoulder  
strap

Palm strap for hand-  
held security

## 1.6 Operational Description

Similar to the flow meter, the GS 8 B is a passive device that derives its operating power from the converter. Depending on the range selected, the GS 8 B then delivers a precision signal back to the converter that simulates a specific, calculable flow condition in the flow tube. This instrument is fabricated of high quality, precision components to provide stable, reliable performance.

Each instrument is factory calibrated to verify the accuracy of its operation.

A zero position on the range switch simulates zero flow, which allows the determination of any zero offset which may be present. This value can then be used in the calculations to provide a computational null for the simulated flows. The provided computational software implements the computations specified in this manual and can be used to automate evaluations and generate verification reports performed with this instrument. The computational software supports GK, GKL and GKH (for the IFC 300 only). For older legacy converters, Ex: F 200, T 900, SC100 Etc, support for either Metric or English primary sensor referenced conditions is also implemented.

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## 2 GS 8 B Connections & Operation

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### 2.1 Connections

**Caution: Switch off the power source to the converter before changing any of the connections!**

**Note:** The GS 8 B **replaces** the primary sensor in the sensor circuit during simulation; all converter outputs reflect the test values, not measured conditions. If receiver/control loop instrumentation is connected observe plant regulations! Switch off alarms, set regulators to manual control etc.

- ▶ The GS 8 B replaces the flow meter (“sensor” “primary”) in the circuit during simulator testing. If there are any questions on proper wiring, consult the wiring diagrams for the flow meter in the converter installation and operating instructions manual.
- ▶ Unless the converter readout or existing external control system equipment is being used as the sole indicator of system operation and output, additional test instruments may need to be added to the system for verifying the current or pulse outputs. The connection diagrams for milliammeters or frequency counters are found in the respective converter installation and operating instructions manuals. When needed, make the milliammeter and frequency counter connections as appropriate.
- ▶ When utilizing the GS 8 B Calc Aide Converter software; consider that various programmed converter parameters such as low flow cut-off, existing zero offset, and incorrect input variables have a significant impact on converter operations. Investigate converter simulation tests for any contributing factors should a converter simulation test result in an out of bounds error value.
- ▶ **Specialized TIDALFLUX Simulation (As full flow tube simulation)**  
The IFC 110 PF & SC 100 PF converters may be connected to the GS 8 B for simulation provided that the flow tube level sensing electronics wiring and power is also disconnected at the converter during simulation (forces full pipe condition for the converter on reboot). Use the IFC 110 or SC 100 spreadsheet selection as converter. Be sure to power down the converter whenever changing the wiring connections.

Make the GS 8 B connections as appropriate for the meter installation as noted below:

#### **2.1.1 Remote Installation Connections (Typically Remote “F” converter versions, may also be used for “W” versions)**

- 1) Connect the “**M**” cable to the GS 8 B.
- 2) Remove the cover from the connection compartment.
- 3) The leads from the sensor primary are all separate pigtails. Take note of the terminal assignment before disconnecting sensor primary leads 1, 2, 3, 7, 8 & 9(if present) from the converter terminals. It is not necessary to remove the ground connection from the sensor primary.
- 4) Carefully connect the GS 8 B “**M**” cable leads marked 1, 2, 3, 7 & 8 to the corresponding converter terminals (as noted above) in place of the sensor primary leads. If the GS 8 B cable leads are not correctly connected, the subsequent checks and operations may not be valid.
- 5) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground, or to any of the available ground points on the converter.

#### **2.1.2 Compact Installation Connections (Typically Compact “K” converter versions)**

- 1) Connect the “**Z**” cable to the GS 8 B.

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- 2) Remove the cover from the electronic compartment. If the sensor primary connections are behind the display, remove the attachment screws and carefully fold the display to the side.
  - 3) The leads from the sensor primary are terminated in blue in-line connectors with polarizing tabs. Leads 7 & 8 are terminated in a two pin connector. Leads 1, 2 & 3 are terminated in either a 3-pin or a 5-pin connector (depending on the converter configuration). Take note of the connector arrangement before disconnecting the connectors for sensor primary leads 1, 2, 3 & 7, 8 from their corresponding converter sockets (pull on the connector shell, **not the cables!**). It is not necessary to remove the ground connection from the sensor primary.
  - 4) Connect the 2-pin connector on the “Z” cable to the 2-pin socket in the converter.
  - 5) Select either the 3-pin or the 5-pin connector on the “Z” cable, depending on which version is used on the converter, and connect it to the corresponding socket on the converter.
  - 6) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground, or to any of the available ground points on the converter.
  - 7) Relocate the display to its normal position and reattach with its screws to prevent possible short circuit damage during testing.

### **2.1.3 IFC 100 “C” Compact Installation Connections**

- 1) Connect the “Z3” cable to the GS 8 B.
- 2) Loosen the four Wall Mount electronics housing cover retaining screws to open electronics compartment cover as described in the IFC 100 Quick Start and Manual directions to access required test connections. The sensor primary cable connections are made via 14 position blue in-line socket mounted on the IFC 100 electronics module and is positioned at the front right of the converter housing behind terminal blocks labeled S, 7, 8 and 1, 2, 3, S. Note for IFS sensor to IFC 100 retro-fits that the sensor primary leads may be configure similar to the IFC 100 W version, see Section 2.1.4.
- 3) Note polarizing tabs and alignment of the connector. Detach connector from electronics (pull on the connector shell, **not the cables!**). Secure loose end of the primary sensor cable during testing.
- 4) Connect the “Z3” cable blue 14 position connector to the IFC 100 electronics 14-pin header.
- 5) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground, or to any of the available ground points on the converter. It is not necessary to remove the ground connection from the sensor primary.

### **2.1.4 IFC 100 “W” Wall Mount Installation Connections (recommended connection method, expedites GS 8 B connections)**

- 1) Connect the “Z3” cable to the GS 8 B.
- 2) Loosen the four Wall Mount electronics housing cover retaining screws to open electronics compartment cover as described in the IFC 100 Quick Start and Manual directions to access required test connections. The sensor primary cable connections are made via spring cage type terminal blocks mounted on the IFC 100 electronics module and are positioned at the front right of the converter housing.
- 3) The leads from the sensor primary are all separate pigtailed. Take note of the terminal assignment before disconnecting sensor primary leads from the respective terminals 1, 2, 3 & 7, 8 on the IFC 100 converter primary connection terminals. It is not necessary to disconnect the “S” and ground connections from the sensor primary.
- 4) Connect the “Z3” cable blue 14 position in-line connector socket to the IFC 100 electronics 14-pin header located behind the sensor cable connection terminal blocks. Note polarizing tabs and alignment of the connector. Secure loose ends of the primary sensor cable leads during testing.

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- 4a) **Alternate Method** – Replace the GS B “Z3” with the GS B “M” cable. Follow guide per Section 2.1.1 Remote installation connections. Carefully connect the GS 8 B “M” cable leads marked 1, 2, 3 & 7, 8 to the corresponding converter terminals (as noted) in place of the sensor primary leads. If the GS 8 B cable leads are not correctly connected, the subsequent checks and operations may not be valid.
  - 5) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground screw, or to any of the available ground points on the converter.

### **2.1.5 IFC 300 “C” Compact Installation Connections**

- 1) Connect the “Z3” cable to the GS 8 B.
- 2) The electronics module must be removed from the housing to access required interface connections. Remove the electronics compartment cover. The sensor primary connections are located at the rear of the electronics. Detach the display board, release the plastic retaining clips located on each side of the display; allow the display to hang free. Loosen two electronics to housing attachment captive screws. Pull the electronics partially out of the housing to access the sensor cable blue connector; do not pull the electronics module by the display cable.
- 3) The sensor primary leads are terminated by a 14 position blue in-line socket connected to electronics pinned header. Note polarizing tabs and alignment of the connector. Detach connector from electronics (pull on the connector shell, **not the cables!**). Secure loose end of the primary sensor cable during testing.
- 4) Connect the “Z3” cable blue 14 position connector to the IFC 300 electronics 14-pin header.
- 5) Reinstall the electronics to the housing, seat the electronics fully into the connector located within the housing. Use care and attention not to snag the detached sensor primary wiring/connector or the GS 8 B interface cable. Secure the captive retaining screws. Remount the display to the plastic retaining clips provided to prevent possible short circuit damage during testing.
- 6) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground, or to any of the available ground points on the converter.

### **2.1.6 IFC 300 “W” Wall Mount Installation Connections (optional connection method, expedites GS 8 B connections)**

- 1) Connect the “Z3” cable to the GS 8 B.
- 2) The Wall Mount electronics housing compartment “doors” need to be opened to access required interface connections. Release the rotary lock on wiring compartment door to open. Release the electronics compartment door latch to open electronics compartment door. The sensor primary cable blue connector is accessible located on the IFC 300 electronics module.
- 3) The sensor primary cable leads are mounted within rubberized tubing and are terminated by a 14 position blue in-line socket connected to electronics pinned header. Note polarizing tabs and alignment of the connector. Detach connector from electronics (pull on the connector shell, **not the cables!**). Secure loose end of the primary sensor cable during testing.
- 4) Connect the “Z3” cable blue 14 position connector to the IFC 300 electronics 14-pin header.
- 4a) **Alternate Method** – Replace the GS B “Z3” with the GS B “M” cable. Follow guide per Section 2.1.1 Remote installation connections. Carefully connect the GS 8 B “M” cable leads marked 1, 2, 3 & 7, 8 to the corresponding converter terminals (as noted) in place of the sensor primary leads. If the GS 8 B cable leads are not correctly connected, the subsequent checks and operations may not be valid.
- 5) The GS 8 B ground connection is a yellow/green lead with a clip end. It can be connected to the same location as the sensor primary ground, or to any of the available ground points on the converter.

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## 2.2 Testing The Signal Converter

- 1) Switch on the power source to the converter. Allow at least 10 minutes warm-up time.

**Note on the LED indicator:** The LED indicator on the GS 8 B will glow a constant red if the driver circuits are working properly and the connections have been made correctly. If the LED is blinking or does not illuminate, recheck the connections to make sure that they are correct. If the LED is still blinking or does not illuminate, contact KROHNE technical assistance.

**Note on indicated flow direction:** The GS 8 B, if properly connected, is set up to indicate the customary flow direction in a flow tube, it has no provision for inverting the indicated flow direction. If the installation is such that the indicated flow direction is inverted from that indicated by the GS 8 B, the sign of the flow direction can be ignored with no impact on the accuracy (Note, however, that the 4-20 mA output may not work correctly if the flow indication is reversed).

- 2) Set the GS 8 B range switch to the "0" position. Choose the appropriate action to take according to the following options.

**A) If converter zero needs to be reset:**

The GS 8 B, with the range switch in the "0" position, presents a no-flow condition to the converter. This allows the converter zero to be accurately established, especially in situations where the pipeline flow cannot be stopped. If such is desired, follow the procedures in the converter installation and operating instructions to reset the converter zero. Note that resetting the converter zero will have an impact on all of the measured values thereafter because it changes the baseline point that the converter is indicating from.

*When this approach is taken, all of the subsequent measurements using the GS 8 B can be used as-is without any modification.*

**B) If converter zero needs to be maintained as-is:**

Sometimes, even if the zero of the converter does not match a "true" zero condition, it is important to keep the zero of the converter where it is to maintain operational balance or continuity. If such is the case, DO NOT reset the converter zero! If the converter does not register zero flow values when the GS 8 B range switch is in the "0" position, it will be necessary to adjust the readings at the other flow rate settings to compensate.

*When this approach is taken, **record the "zero-flow" readings** for all of the system operation and output indicators (e.g. display, millimeters, pulse counters, or etc.) which will be used for the subsequent measurements. The GS 8 B Calc Aide software provides a change in the indicated flow values relative to this "zero-flow" condition with the range switch set at the "0" position.*

All of the calculations below are also based on the assumption of a "true" zero-flow condition. Therefore, it will be necessary to **subtract any "zero-flow" values measured in step 2B from the readings taken in later steps prior to evaluating the outcome** (Note that this is an algebraic subtraction, and must consider the sign of the "zero-flow" readings and the indicated flow direction for correct results). This will provide values equivalent to what would have been obtained with a converter re-zero; without any loss of accuracy and without having to disturb the existing converter zero setting.

- 3) Determine the initial test position of the range switch, and the set points for the display, the analog current ( $I$ ) and frequency ( $f$ ) for the pulse outputs as follows:

**Note: The following calculations can be done automatically and verification records generated by using the GS 8 B Calculation Aide spreadsheet software provided with this unit or available for free from**

**3.1) Determine range factor (X)**

$$X = \frac{Q * K * F}{GK * DN^2}$$

Where:

**Q** = Full scale range (100% flow) in volumetric units [**V**] per unit time [**t**]

**V** = Volume (in liters [l], cubic meters [m<sup>3</sup>], or US gallons [gal])

**t** = Time (in seconds [s], minutes [min], or hours [h])

**K** = Scaling constant, based on volume & time units, from Table 1

**F** = 1, if GK indicated as “GK”, for IFC 300 converter GK/GKL is treated as “GK”

**F** = 1, if GK indicated as “GKH”, for IFC 300 converters only”

**F** = 2, if GK indicated as “GKL” ”

**GK** = Primary sensor constant (see primary sensor data tag, should match GK value in converter)

**DN** = Meter size (in mm or inches)

**Table 1: Scaling Constants (K) for Given Volume, Time & Diameter Units**

Diameter (DN) <sup>1</sup>	V ↓	t ⇒	Seconds (s)	Minutes (min)	Hours (h)	Days (d)
Units in mm <sup>1</sup>	Liters (l)		4177.3	69.622	1.1604	
	Cubic meters (m <sup>3</sup> )		4177295	69622	1160.4	
	Gallons (gal)		15813	263.55	4.3924	
	Million Gallons (Mgal)					183018
Units in inches <sup>1</sup>	Liters (l)		6.4748	0.10791	0.0017986	
	Cubic meters (m <sup>3</sup> )		6474.8	107.91	1.7986	
	Gallons (gal)		24.51	0.4085	0.0068083	
	Million Gallons (Mgal)					283.68

Notes: 1. Select whether to use **mm** or **inches** values as follows:

- Use “**Units in mm**” values if “Diameter” indicated on converter is in **mm**
- Use “**Units in inches**” values if “Diameter” indicated on converter is in **inches**
- Use “**Units in mm**” values if “Diameter” indicated on converter is in **both mm & inches**

**3.2) Determine maximum simulated flow position of range switch for system being evaluated (Y = y<sub>max</sub>)**

Use Table 2 to determine the value, **Y = y<sub>max</sub>**, which comes closest to the Range Factor (**X**) & meets the condition **Y ≤ X**.

**Table 2: Nominal Range Values (y) for Range Switch Positions**

Range Switch Position	Nominal Flow Velocity Represented at Selected Switch Setting Normalized – @ GK = 1 (ft/sec)
<b>0</b>	0
<b>A</b>	0.5
<b>B</b>	1
<b>C</b>	2

<b>D</b>	5
<b>E</b>	10

**Note:** Simulated flow output can be checked at the maximum simulated flow setting,  $Y$ , and also at lower flow settings,  $y$ , selected from Table 2. Each of the following steps should be repeated (as needed) for each simulated flow setting,  $y$ , which is evaluated.

### 3.3) Calculate set point flow indication at selected GS 8 B range switch setting

$$Q_{SP} = \frac{y}{X} * Q \quad [\text{appropriate flow units}]$$

Where:

$Q_{SP}$  = Expected flow rate indication for current range value,  $y$

$y$  = Range value [from the "Normalized (@ GK = 1)" column in Table 2] corresponding to currently selected range switch setting

### 3.4) Calculate set point reading of analog current (I) outputs

$$I = I_{min} + \frac{y}{X} (I_{max} - I_{min}) \quad [\text{mA}]$$

Where:

$I_{min}$  = Minimum value of analog output (e.g. 4 mA with 4-20 mA)

$I_{max}$  = Maximum value of analog output (e.g. 20 mA with 4-20 mA)

### 3.5) Calculate set point frequency (f) of pulse outputs

$$f = \frac{y}{X} * \frac{f_{max}}{3600} \quad [\text{Hz}]$$

Where:

$f_{max}$  = Maximum value of pulse output [pulses/h]

- 4) Set the range switch to the value determined in step 3) above.
- 5) Check the set point readings for  $I$  or  $f$  [ref. Subparagraphs 3.3 and 3.4 under step 3 above].
- 6) Deviation must be < 1.5% of set point! If it is greater, double check that the GS 8 B LED is not blinking [if it is blinking, see note under paragraph 2.2 above]. Locate the fault as described in the signal converter installation and operating instructions.
- 7) Linearity test: Adjust the range switch to lower  $y$  values. Readings will drop in proportion to the change in the  $y$  values given in Table 2.
- 8) Switch off the power source after completing the tests.
- 9) Disconnect the GS 8 B and the other test equipment.
- 10) Restore the primary sensor connections to their original configuration.
- 11) Replace all housing covers.
- 12) The system is ready for normal operation after the power source has been switched on.

### 3 Technical Data

<b>Ambient Temperature</b>	-4°F to +140°F
<b>Protection Category</b>	IP 40, per IEC/EN 60529
<b>Field Current</b>	±60 to ±125 mA pulsed DC 120 to 250 mA Peak to Peak
<b>Error (% of measured value)</b>	±0.4% SC 80 A: ±0.6%
<b>Recommended Calibration Interval</b>	Annual

#### Initial Calibration Interval for GS 8 B

The GS 8 B is initially calibrated at the time of manufacture, but then may be stored for a period of time before delivery to the customer. Because it is unused during this time, regardless of how much time has elapsed between the initial calibration and delivery, the recommended date for the first recalibration by the customer would be 12 months after the ship date to the customer. (See calibration sticker on GS 8 B case)

The recommended interval for subsequent calibrations is 12 months from time of calibration.

**Note:** The calculations for Section 2.2 Testing the signal converter, step 3, can be done automatically and verification records generated by using the **GS 8 B Calc Aide.xls** spreadsheet software and the **GS 8 B Calculation Aide** guide provided with this unit or available for free from KROHNE, Inc. The current version is Rev-1.3.2. Please contact your local KROHNE representative for any available updates.

#### Typical GS 8 B Calculation Aide Screen Shots

**GS 8 B STANDARD SETTINGS**

This spreadsheet is protected, this entry is only allowed in the drop-down boxes & bright green cells. To use this calculator, you will only need to input the requested information in the bright green cells from your data tags. The Converter type, engineering units, diameter and frequency have drop down boxes, allowing the user to simply choose from the list. This spreadsheet will automatically choose inch or metric (depending upon the converter), and state which (GRL) to use. Printing of the programming results is allowed by simply choosing "Print" through your File menu.

**Important:** If there is a flowrate value present at the zero setting, you must compensate to obtain proper evaluation values. You can zero your converter, but this might mean that you would have to redo a zero calibration once you reconnect with your primary head. If you are unable to redo a zero calibration after reconnecting, then you should use the offset-compensated tables on the second sheet of this spreadsheet (Calculator + Zero Compensation).

Rate Recorder: 300000  
Flow Tube Model #: 021F0104-K300-C

Serial #: Example  
Correction #: Example  
Tag #: Example

INPUT VARIABLES

Converter: 1000  
Frequency: 120  
Output Current: 12.196

Calculated Flowrate (GSCal/m3): 512.244  
Observed Flowrate (GSCal/m3): 512.244

GS 8 B Knob Setting	Current Output (mA)	Frequency Output (Hz)	Calculated Flowrate (GSCal/m3)	Observed Flowrate (GSCal/m3)	Resolution
A	6.09	120.00	120.00	120.00	0.00%
B	8.10	256.12	256.12	256.12	0.01%
C	12.08	512.24	512.24	512.24	0.01%
D					
E					

Version: Rev 1.3.2-USA

Worksheet GS 8 B Calc Aide.xls Rev-1.3.2

**GS 8 B On-Site Verification Record**

**GS 8 B STANDARD SETTINGS**

This spreadsheet is protected, this entry is only allowed in the drop-down boxes & bright green cells. To use this calculator, you will only need to input the requested information in the bright green cells from your data tags. The Converter type, engineering units, diameter and frequency have drop down boxes, allowing the user to simply choose from the list. This spreadsheet will automatically choose inch or metric (depending upon the converter), and state which (GRL) to use. Printing of the programming results is allowed by simply choosing "Print" through your File menu.

**Important:** If there is a flowrate value present at the zero setting, you must compensate to obtain proper evaluation values. You can zero your converter, but this might mean that you would have to redo a zero calibration once you reconnect with your primary head. If you are unable to redo a zero calibration after reconnecting, then you should use the offset-compensated tables on the second sheet of this spreadsheet (Calculator + Zero Compensation).

Rate Recorder: 300000  
Flow Tube Model #: 021F0104-K300-C

Serial #: Example  
Correction #: Example  
Tag #: Example

INPUT VARIABLES

Converter: 1000  
Frequency: 120  
Output Current: 12.196

Calculated Flowrate (GSCal/m3): 512.244  
Observed Flowrate (GSCal/m3): 512.244

GS 8 B Knob Setting	Current Output (mA)	Frequency Output (Hz)	Calculated Flowrate (GSCal/m3)	Observed Flowrate (GSCal/m3)	Resolution
A	6.09	120.00	120.00	120.00	0.00%
B	8.10	256.12	256.12	256.12	0.01%
C	12.08	512.24	512.24	512.24	0.01%
D					
E					

Version: Rev 1.3.2-USA

GS 8 B Calc Aide.xls Rev-1.3.2 Verification Report



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