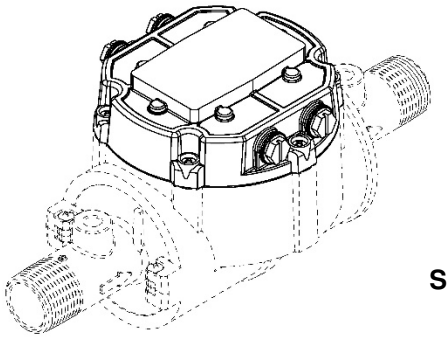
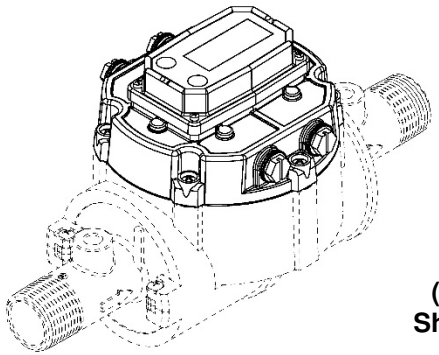
Product Owner's Manual EN

FLOMEC®



QB Cover Plate
Shown on 1 inch NPT Meter



QB Display Cover Plate
(With QSE Q9 Computer)
Shown on 1 inch NPT Meter

QB Electronics for QSE Electromagnetic Meter

09/2021 920896-02 Rev. G

Please save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described.

Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage.

Please refer to back cover for information regarding this product's warranty and other important information.

DO NOT RETURN THIS PRODUCT TO THE STORE!

Please contact Great Plains Industries, Inc.® before returning any product. If you are missing parts, or experience problems with your installation, contact our Customer Support Department. We will be happy to assist you.

Call: 888-996-3837 or 316-686-7361

Email: meters@gplains.com

SAVE FOR YOUR RECORDS

Model #: _____

Serial #: _____

Purch. Date: _____

TABLE OF CONTENTS

BEFORE YOU BEGIN

Usage Requirements

- This product is not approved for use in hazardous locations.

UNPACKING/INSPECTION

Inspect

- After unpacking the unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing or damaged parts. Shipping damage claims must be filed with carrier.

- See General Safety Instructions, and all Cautions, Warnings, and Dangers as shown.

SPECIFICATIONS

MECHANICAL	
Cover Plate Port Threads	Female 1/2-20 UNF-2B (Compatible with PG7 thread)
Port Strain Relief	Hubble PG7
Grip Range (Cable Outside Diameter)	0.11 - 0.26 in. (2.79 - 6.6 mm)
Operation Temperature	See QSE Series Electromagnetic Meter Owner's Manual
Ambient Air Operation Temp	See QSE Series Electromagnetic Meter Owner's Manual
Port Conduit Adapter	GPI PG7 x 1/2 in. NPT Male
Operation Temperature	See QSE Series Electromagnetic Meter Owner's Manual
Ambient Air Operation Temp	See QSE Series Electromagnetic Meter Owner's Manual
POWER SUPPLY	
Voltage Requirement	Min. 12 VDC
	Max. 36 VDC (higher voltage may damage unit)
MAX POWER CONSUMPTION	
QSE Meter with QB	75mA 2 watts @ 24VDC 3 watts @ 36VDC
ELECTRICAL	
Pollution Degree	2
Installation Category	1
Altitude	2000m Max.
Indoor use only	

APPROVAL RATINGS

QSE Q9 Computer Electronics

WEEE DIRECTIVE

The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) was approved by the European Parliament and the Council of the European Union in 2003. This symbol indicates that this product contains electrical and electronic equipment that may include batteries, printed circuit boards, liquid crystal displays or other components that may be subject to local disposal regulations at your location. Please understand those regulations and dispose of this product in a responsible manner.

RoHS Compliant (2011/65/EU)

This product is in compliance with the RoHS Directive of the European Parliament and of the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

INTRODUCTION

The QSE meter has multiple types of output electronics available.

The electronics for the operation of the meter coils and flow tube is housed within the meter body casing. The cover plate is designed in two versions; a plain cover plate and a display mount cover plate.

The QB pulse-out electronics can be housed within either of the two cover plates. A display (QSE Q9) is also available mounted to the “display mount” cover plate.

All meters are equipped with pulse-out electronics (QB) as the default standard regardless of style of cover plate. This manual contains information and meter wiring diagrams for the QB pulse-out electronics

IMPORTANT NOTICE

QB electronics are very sensitive to electric noise if operated within 6 inches of some electric motors, relays, transformers or other sources of electronic noise.

If the QB electronics are used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

GENERAL INFORMATION

As a conductive liquid passes through the magnetic field created by the meter, a voltage is induced into the liquid that is directly proportional to the velocity of the flow. Electrodes in the meter flow tube transfer this induced voltage to the meter electronics.

The QB electronics convert the induced voltage into usable information. The pulse-out information is one function of the electronics; another function supplies the display (when installed) with the information and power it needs to operate as designed.

The QB electronics is a signal conditioner with industry standard pulse output. It can transmit those pulses to customer equipment up to 5,000 feet away. It is powered by customer-supplied external power.

SAFETY

- **This product is not approved for use in hazardous locations.**
- Be sure O-rings and seals are kept in good repair.
- When applying power, adhere to specifications in this manual.
- Disconnect external power before attaching or detaching input or output wires.

INSTALLATION

CAUTION: *Installation near high electromagnetic fields and high current fields is not recommended and may result in inaccurate readings.*

If you ordered your QB electronics with a meter, it is installed at the factory. If you ordered your QB electronics separately from a meter, follow the instructions below. In every case, please review and thoroughly understand all manuals and installation instructions before proceeding.

QSE meters are designed to measure flow in only one direction. To mount your QB electronics (with or without a display):

- Install the cover plate seal.
- Connect the QB module PC board connector to the AFE module PC board connector inside the meter housing with the ribbon cable. The ribbon cable connectors are polarized and cannot be incorrectly connected (see Figures 1 & 2).
- Install the cover plate with screw holes aligned.
- Install the (6) cover plate screws and tighten. Make sure the cover plate seal is fully seated before tightening the screws.

A ribbon cable connects the QB electronics within the cover plate to the AFE electronics within the meter body and allows 180 degrees of movement in either direction (see Figure 1).

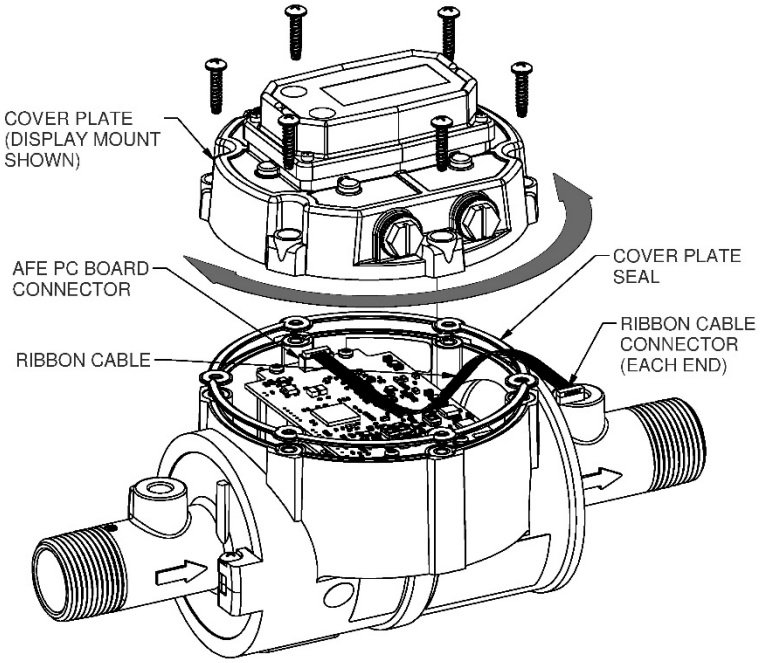


Figure 1

INSTALLATION (continued)

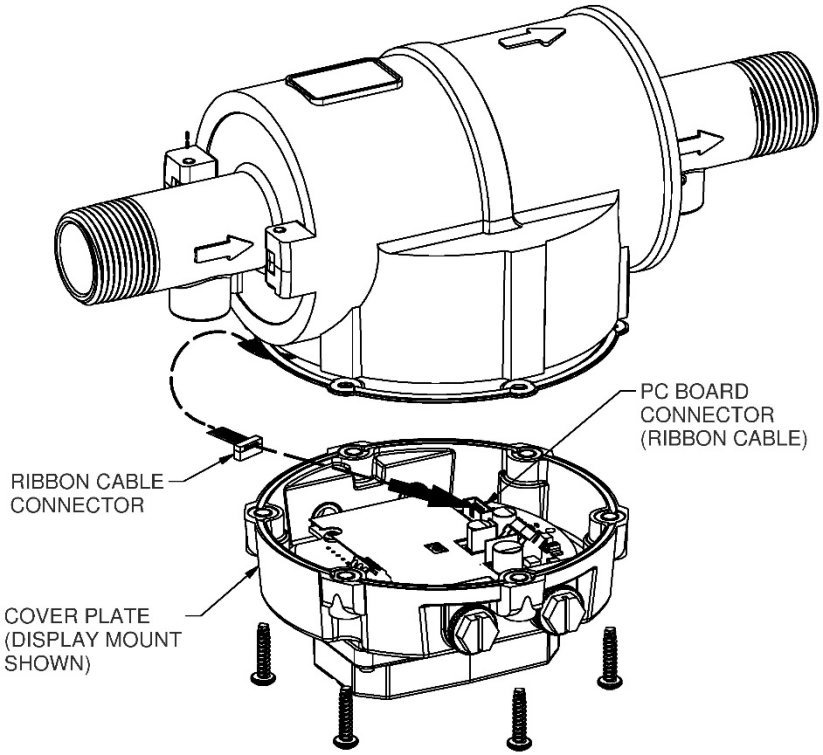


Figure 2

WIRING

All electronic options are associated with a matching style of meter cover plate. This cover plate has four threaded ports, compatible with PG7 threads, for gaining wiring access to the electronics inside the cover plate. The meter is shipped with the ports environmentally sealed with a threaded plug and seal. Remove one or more of these plugs as required to install the supplied port fittings noted below.

Each meter is supplied with cable gland strain reliefs with O-rings and 1/2 NPT adapters with seals for use in the threaded ports of the meter cover plate. Select the port fittings that fits your process and replace the threaded plugs in the cover plate with the fittings as required. The threaded plugs installed at the factory may be left in any unused cover plate port indefinitely.

It is recommended that a “removable” thread-locker (fluid, stick, tape, spray, etc.) be used when installing the strain reliefs or adapters into the cover plate ports.

Strain Reliefs:

The cable gland strain reliefs will accommodate a cable diameter of 0.11 - 0.26 inches (2.79 - 6.6mm) and provide an environmental seal around the cable when the dome-nut is tightened.

WIRING (Continued)

NPT Adapters:

The 1/2 NPT adapter fittings are used for attaching flex conduit to the meter, for those applications that require cable runs to be enclosed in conduit. Cable to be provided by customer to accommodate job requirements. Cable is not included with meter.

NOTE: *Some connectors installed on the PC board are not used for this QB application. Do not attempt to use these connections for other envisioned unauthorized purposes or circuit damage to the electronics will occur.*

Isolated Power Supply Wiring

The QSE meter has an internal connection to the conductive fluid through one of the electrodes. The fluid and/or plumbing in most applications should be earth grounded to prevent any static buildup and provide a proper grounding for the system. Therefore, the power supply connection to the QB should have an earth ground isolated output to prevent ground loop currents.

Failure to use an isolated power supply could result in ground faults, and could cause accuracy issues created by stray voltages due to the ground loop currents.

NOTE: *Proper grounding is a requirement.*

The wire gauge for the power supply cable should be between 16 to 26 AWG to properly fit in the wire termination connector. The external power supply used for supplying power to the QB should be rated for a minimum of 0.25 Amps.

The power supply polarity is not a requirement for the DC supply as long as the supply is properly earth ground isolated.

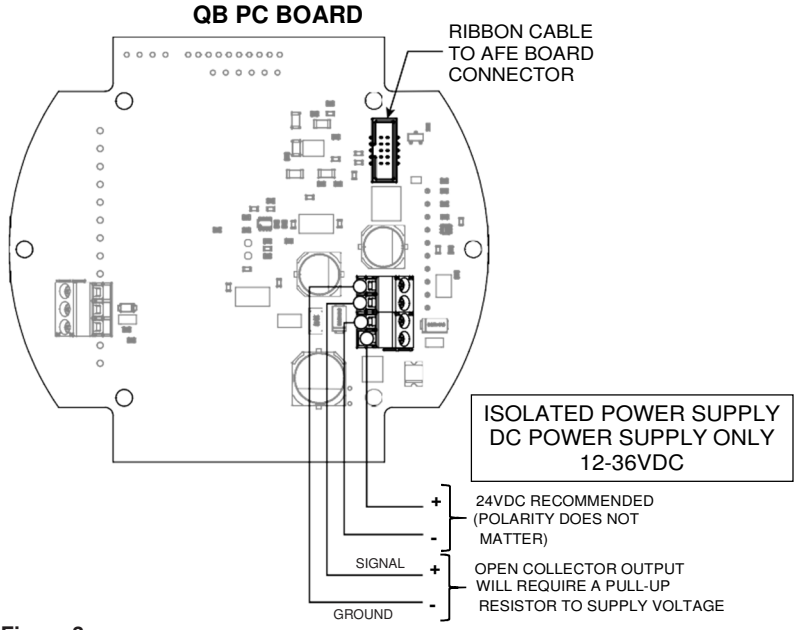


Figure 3

WIRING (Continued)

QB Board Pulse Out Cable and Power Cable

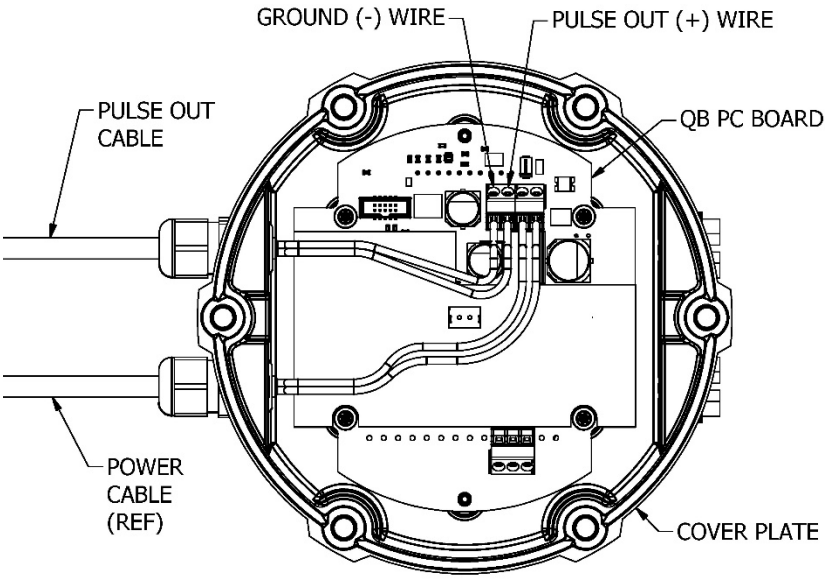


Figure 4

The pulse output from the QB provides 2500V galvanic isolation from the QB digital circuitry to the external customer equipment. The QB pulse output is an open collector design which requires an external pull up resistor to an external power supply. The resistance must be chosen such that the QB will not sink more than 30mA of current. The external power supply voltage must also be less than +36VDC to prevent damage to the QB.

The wire gauge for the pulse output cable should be between 16 to 26 AWG to properly fit in the wire termination connector.

The pulse output ground should be properly connected to the customer equipment ground, while the pulse output signal should be properly connected to both the customer equipment pulse input and an external pull up resistor to an external supply (if the customer equipment doesn't contain the pull up resistor).

NOTE: *The QSE Q9 Display enables pulse output to be a scaled pulse output. QB Electronics without the QSE Q9 Display can only send Unscaled Pulse Output.*

WIRING (Continued)

WIRING DIAGRAM

Input: AFE Board
Output: Pulse Output

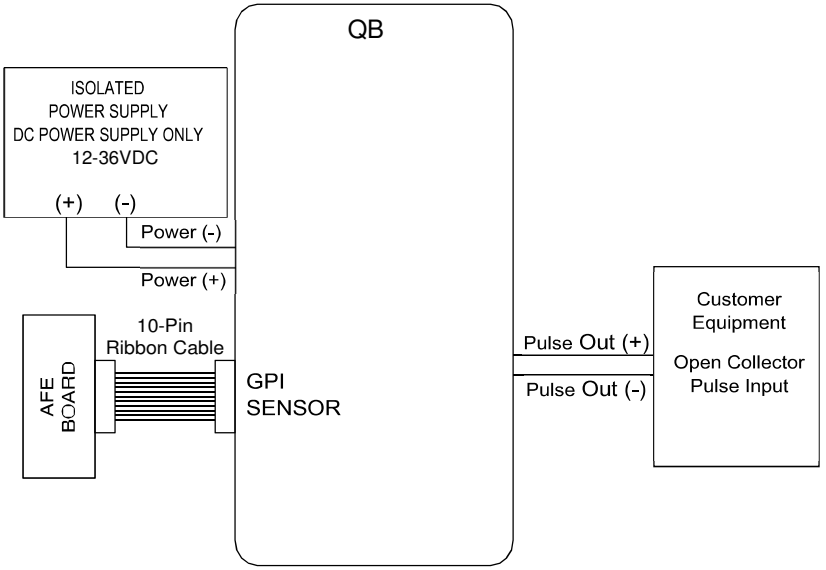


Figure 5

NOTE: *The QSE Q9 Display enables pulse output to be a scaled pulse output. QB Electronics without the QSE Q9 Display can only send Unscaled Pulse Output.*

OPERATION

QSE Q9 Display Only - Scaled Pulse Output Enabled

The QSE Q9 Display provides the pulse output signal to the QB PC Board thru the 10-pin connector. The QB Electronics (board) then provides a wire terminal block for the open collector, current sinking pulse output.

This pulse output is set to raw pulse output as the default setting on the QSE Q9 display. If your application requires a scaling of the pulse output, refer to the QSE Q9 owner's manual for instructions on the configuration of the scaled pulse feature.

Visit flomecmeters.com to download owner's manuals
and other technical documents.

TROUBLESHOOTING

Symptom	Possible Cause(s)	Corrective Action
A. No pulse output signal.	1. Incorrect or no input power. 2. Not wired correctly. 3. Broken connection. 4. Defective PC board connector. 5. Defective unit.	1. Supply correct power requirements. 2. Check owner's manual for correct installation. 3. Check resistance to determine location of break. 4. Contact distributor or factory for replacement. 5. Contact distributor or factory for replacement.
B. Pulse output values are not giving accurate total volumes.	1. Customer's "pulse Input device" (pulses per unit of volume) does not match QB Electronics pulse output (pulses per unit of volume). 2. QSE Q9 display calibration is NOT optimized for best results.	1. Reconfigure QB Electronics pulse output via QSE Q9 Display (or customer's "pulse input device") to match in pulses per unit of volume (QB Electronics pulse output pulses per unit of volume = input pulses per unit of volume). 2. Verify QSE Q9 display value is giving correct volume totals.
C. QSE Q9 display value not giving correct volume totals.	1. QSE Q9 display showing velocity, flowrate, or accumulative total instead of batch total. 2. QSE Q9 display calibration is not optimized for best results.	1. Press "bottom button" of QSE Q9 display until correct volume is displayed (see Operation Section in QSE Q9 owner's manual). 2. If "1" above is not the Issue, see Operation Section of this manual.

NOTE: *The QSE Q9 Display enables pulse output to be a scaled pulse output. QB Electronics without the QSE Q9 Display can only send Unscaled Pulse Output.*

NOTES

MAINTENANCE

Check cable-entry seals periodically. Tighten and/or apply sealant if needed. This is especially important in environments containing heavy concentrations of dust, oil mist, or other residue.

Check all wiring connections occasionally for oxidation or corrosion. Clean and re-seat if such conditions are noted.

If necessary, check and re-seat any connections that may have been subjected to strain (during rework or construction, for example).

SERVICE

For warranty consideration, please contact your local distributor. If you need further assistance, contact the GPI Product Support Department in Wichita, Kansas, during normal business hours.

A toll free number is provided for your convenience.

1-888-996-3837

To obtain prompt, efficient service, always be prepared with the information on the decal of your meter.

- Receive a return authorization number.

⚠ CAUTION ***Do not return this product without prior approval from the GPI Product Support Department. Due to strict government regulations, GPI cannot accept parts unless they have been drained and cleaned.***

FLOMEC® TWO-YEAR LIMITED WARRANTY

Great Plains Industries, Inc. 5252 E. 36th Street North, Wichita, KS USA 67220-3205, hereby provides a limited warranty against defects in material and workmanship on all products manufactured by Great Plains Industries, Inc. This product includes a 2-year warranty. Manufacturer's sole obligation under the foregoing warranties will be limited to either, at Manufacturer's option, replacing or repairing defective Goods (subject to limitations hereinafter provided) or refunding the purchase price for such Goods theretofore paid by the Buyer, and Buyer's exclusive remedy for breach of any such warranties will be enforcement of such obligations of Manufacturer. The warranty shall extend to the purchaser of this product and to any person to whom such product is transferred during the warranty period.

The warranty period shall begin on the date of manufacture or on the date of purchase with an original sales receipt. This warranty shall not apply if:

A. the product has been altered or modified outside the warrantor's duly appointed representative;

B. the product has been subjected to neglect, misuse, abuse or damage or has been installed or operated other than in accordance with the manufacturer's operating instructions.

To make a claim against this warranty, or for technical assistance or repair, contact your FLOMEC distributor or contact FLOMEC at one of the locations below.

In North or South America contact

Great Plains Industries, Inc.
5252 East 36th St. North
Wichita, KS 67220-3205
USA

888-996-3837

www.flomecmeters.com
(North America)

Outside North or South America contact

GPI Australia
(Trimec Industries Pty. Ltd.)
12/7-11 Parraweena Road
Caringbah NSW 2229
Australia

+61 02 9540 4433

www.flomec.com.au

The company will step you through a product troubleshooting process to determine appropriate corrective actions.

GREAT PLAINS INDUSTRIES, INC., EXCLUDES LIABILITY UNDER THIS WARRANTY FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES INCURRED IN THE USE OR LOSS OF USE OF THE PRODUCT WARRANTED HEREUNDER.

The company herewith expressly disclaims any warranty of merchantability or fitness for any particular purpose other than for which it was designed.

This warranty gives you specific rights and you may also have other rights which vary from U.S. state to U.S. state.

NOTE: In compliance with MAGNUSON MOSS CONSUMER WARRANTY ACT – Part 702 (governs the resale availability of the warranty terms).