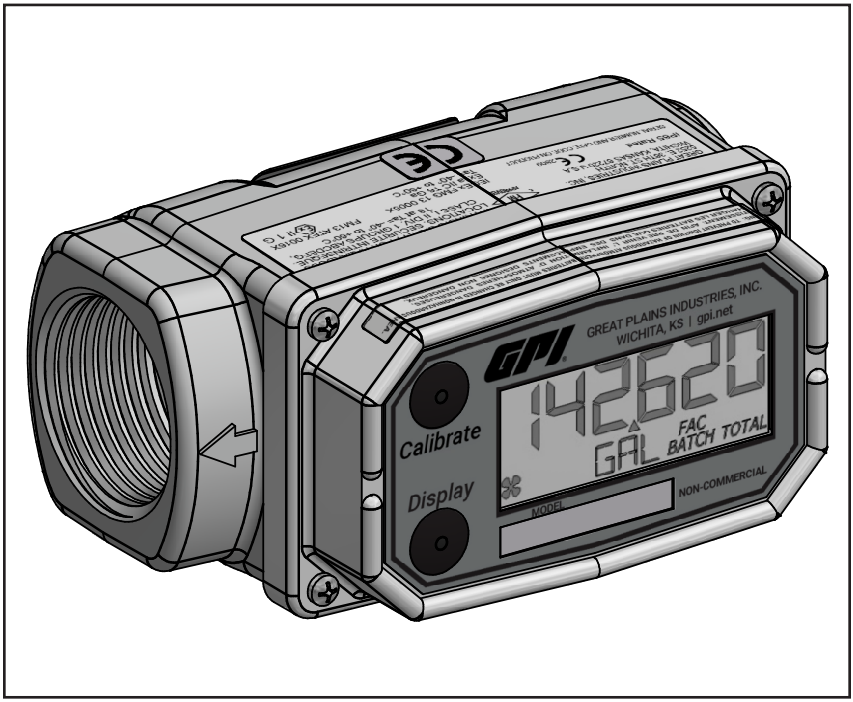
SAVE THESE INSTRUCTIONS

03 Series
ELECTRONIC DIGITAL METER
Owner's Manual



11/02/2020

920685-09 Rev M

To the owner…

Congratulations on receiving your GPI® Electronic Digital Meter. We are pleased to provide you with a meter designed to give you maximum reliability and efficiency.

Our business is the design manufacture, and marketing of liquid handling, agricultural, and recreational products. We succeed because we provide customers with innovative, reliable, safe, timely, and competitively-priced products. We pride ourselves in conducting our business with integrity and professionalism.

We are proud to provide you with a quality product and the support you need to obtain years of safe, dependable service.

Victor Lukic, President
Great Plains Industries, Inc.

GENERAL INFORMATION

This manual will assist you in operating and maintaining your 03 Series meter. Differences in models are detailed in the Specifications Section of this manual. Please take a few moments to read through this manual before installing or operating your meter. If you need assistance, contact the dealer from whom you purchased your meter.

If You Measure in Litres

This manual commonly refers to "gallons." Depending on the model of 03 Series Meter, "gallons" or "GAL" will represent US gallons. Your meter is factory calibrated in gallons (GAL) and litres (L). Consider all references to "gallons" apply equally to US gallons, and litres.

TABLE OF CONTENTS

This symbol is used throughout the manual to call your attention to safety messages.

⚠ WARNING **Warnings** alert you to the potential for personal injury.

⚠ CAUTION **Cautions** call your attention to practices or procedures which may damage your equipment.

Notes give information that can improve efficiency of operations.

It is your responsibility to make sure that all operators have access to adequate instructions about safe operating and maintenance procedures.

Read Me!

For your safety, review the major warnings and cautions below before operating your meter.

⚠ WARNING

The apparatus enclosure may contain aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

⚠ WARNING

Part of the enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned with a damp cloth.

1. This meter is approved to handle only fluids that are compatible with the meter's housing material.

⚠ WARNING

When metering flammable liquids, observe precautions against fire or explosion. Do not meter in the pressence of any source of ignition including running or hot engines, lighted cigarettes, or gas or electric heaters.

⚠ WARNING

If handling hazardous liquids, always follow the manufacturer's safety precautions. Wear protective clothing such as goggles, gloves and respirators as instructed.

2. Always dispose of used cleaning solvents in a safe manner according to the solvent manufacturer's instructions.
3. During meter removal, liquid may spill. Follow the liquid manufacturer's safety precautions to clean up minor spills.
4. Do not blow compressed air through the meter.
5. Do not submerge the meter.
6. Do not allow liquids to dry inside the meter.
7. Do not use a wrench to install plastic meters. Hand tighten only.
8. For best results, always verify calibration before use.

INTRODUCTION

Your GPI Electronic Digital Meter is designed for measuring liquids. The meter translates pulse data from the turbine into calibrated flow units shown on the meter's readout. Field replaceable batteries provide power.

All meters are tested and factory calibrated before shipping.

This manual refers to three families of meters: Low Flow, one inch, and two inch. To further identify your particular model, refer to the Specifications Section at the end of this manual.

BEFORE INSTALLATION

Upon receipt, examine your meter for visible damage. Remove protective plugs and caps for a thorough inspection. If any items are damaged or missing, contact your distributor.

Make sure the meter model meets your specific needs. Refer to the Specifications Section and confirm the following:

1. Your flowrate is within the limits of your model.
2. Your liquid is compatible with your meter's material.
3. Your system's pressure does not exceed the meter's maximum pressure rating.

Quick Start

If your installation is relatively simple and you have installed our Electronic Digital Meter (EDM) meters before, you may use this section to quickly install and operate your meter. This section is especially helpful to those measuring thin viscosity fluids dispensed through a hose and nozzle.

If you complete this section and encounter difficulties, please refer to other sections, as necessary.

NOTE: To accommodate different installations, the faceplate can be rotated 180 degrees. To do this, remove the four corner screws from the face of the meter and lift the computer assembly from the turbine. Rotate the computer assembly 180 degrees. Place on the turbine ensuring the seal is fully seated. Secure the four screws.

Connections

1. To protect against leakage, make sure all threads are sealed with two or three turns of thread tape or a sealing compound compatible with the liquid being metered. (Figure 1)

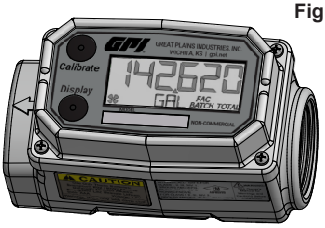
Figure 1

⚠ CAUTION

Make sure the thread tape or sealing compound does not interfere with flow.

2. Make sure the arrow on the outlet is pointing in the direction of the flow. (Figure 2)

Figure 2



3. Tighten the meter onto the fittings. Use a wrench only on metal meters. Hand tighten plastic meters.

⚠ CAUTION

Using a wrench on plastic meters could damage the meter.

Verify Meter Accuracy

Before using, you should check the meter's accuracy and verify calibration.

1. Make sure there is no air in the system by starting the flow until it runs steadily. Then, stop the flow using a valve or nozzle.
2. If desired, hold down DISPLAY for 3 seconds to zero the meter's Batch Total. When zeros appear, release the button.
3. Verify meter accuracy before use. To do this, measure a known quantity of liquid into a calibration container and compare the volume measured against the readout. If necessary, field calibrate the meter. Refer to the Calibration Section.

4. To ensure accurate measurement, remove all air from the system before use. To purge the system of air:
   a. Open the discharge valve or nozzle and allow fluid to completely fill the system. Make sure the stream is full and steady and no air is present.
   b. Close the discharge valve or nozzle. Leave the system on.
   c. Start normal operations. If necessary, zero the Batch Total.

Using the Meter

The meter display is on continually and always ready for use.

To determine the exact volume measured with each use, use the Batch Total function. You can zero the Batch Total before measuring and monitor volume as it flows through the meter, just like the gas pump at the service station as you fill up your tank.

To zero the Batch Total, make sure the meter is on. Hold down the DISPLAY button for 3 seconds until zeros appear. Release the button, start the flow, and watch the volume on the readout.

When display becomes dim, faded or the low battery message appears (see below), the batteries need to be replaced. Reference the Computer Maintenance Section for details.

INSTALLATION

Review the Before Installation and Quick Start Sections. Also consider the following recommendations, especially if you are installing your meter in a piping system. These suggestions will help maximize performance of your meter.

The meter can be mounted either vertically or horizontally. It should be field calibrated in the same orientation in which it is mounted.

Avoid installing the meter in electrically "noisy" environments. If installed within 6 inches (15.2 cm) of large motors, relays, vehicle ignition systems, or transformers, the meter's accuracy can be adversely affected.

To avoid pulsation or swirl, use the following recommendations.

For Low Flow or one inch meters, install with
- 20 inches (51 cm) of straight pipe upstream and
- 5 inches (13 cm) of straight pipe downstream.

For two inch meters, install with
- 40 inches (102 cm) of straight pipe upstream and
- 10 inches (26 cm) of straight pipe downstream.

Flow straightening vanes installed upstream from the meter can reduce the upstream pipe length.

Flow control valves upstream from the meter and within the straight pipe distances given earlier can adversely effect meter accuracy. This is especially true when measuring liquids with low vapor pressures such as fuels, oils and solvents.

If cavitation effects meter accuracy, a flow control valve on the downstream side of the meter can provide a back pressure of 5 to 50 PSI (0.3 to 3.4 bar) to minimize the problem.

Foreign material in liquid can clog the meter's rotor. If the problem affects meter accuracy or material coats the rotor, install screens to filter the incoming flow.

- For Low Flow meters use a 25 micron or .005 inch screen, 120 mesh.
- For one inch or two inch meters use a 500 micron or .018 inch screen, 35 mesh.

For maximum accuracy, the velocity profile of the flow entering the meter must be uniform throughout the cross section of the pipe.

Make sure there are no leaks in the connections. To seal leaks, remove and inspect the meter and replace the thread tape or sealant. Refer to the Troubleshooting Section.

METER MAINTENANCE

During daily use, these meters are virtually maintenance-free.

When not in use, rinse and clean and keep free of liquids to protect internal components. If liquids have dried and caked on the rotor, refer to the Cleaning instructions.

To Remove

⚠ WARNING

During meter removal, liquid may spill. Follow the liquid manufacturer's safety precautions for clean up of minor spills.

1. Ensure all liquid is drained from the meter. This could include draining the hose, meter, nozzle or pipe.
2. Wear protective clothing as necessary, loosen both ends of the meter. Use a wrench only on the meter's flat metal surfaces.

⚠ CAUTION

Using a wrench on plastic meters could damage the meter.

3. If the meter is not immediately installed again, cap the hose end or pipe to prevent spills.

To Clean

During use, the meter should be kept full of liquid to ensure that drying does not occur inside the meter. If drying or caking should occur, the rotor will stick or drag, affecting accuracy. In this circumstance, cleaning is required.

To determine if the rotor is stuck or dragging, gently blow air through the meter and listen for the quiet whir of the rotor.

⚠ CAUTION

Never blow compressed air through the meter. It could damage the rotor.

To clean a stuck or dragging rotor, follow the procedures below.

1. Remove the meter from the hose or pipe following the directions above.
2. Apply a penetrating lubricant such as WD-40® or a recommended cleaning solvent on the turbine's rotor, shaft and bearings. Allow it to soak for 10 to 15 minutes.

⚠ CAUTION

Do not submerge the meter.

3. Carefully remove residue from the rotor using a soft brush or small probe such as a screwdriver. Be careful not to damage the rotor and support.
4. When the rotor turns freely, install it again following the Installation instructions provided in this manual.

To Store

After thoroughly cleaning the meter, store it in a dry location.

⚠ WARNING

Follow the liquid manufacturer's instructions for the disposal of contaminated cleaning solvents.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
A. METER IS NOT ACCURATE	1. Field Calibration not performed properly	Field calibrate again or select Factory Calibration.
	2. Factory Calibration not suitable for liquid being measured	Perform a Field Calibration according to Calibration Section.
	3. Meter operated below minimum flowrate	Increase flowrate. See Specifications Section.
	4. Meter partially clogged with dried liquid	Remove meter. Clean carefully with WD-40® or similar penetrating lubricant. Make sure rotor spins freely.
	5. Turbine bearings partially clogged with dried liquid	Remove meter. Lubricate bearings with WD-40® or similar penetrating lubricant through small holes in turbine supports. Make sure rotor spins freely.
	6. Teflon® tape or other material wrapped around rotor	Remove meter. Clear material from rotor. Make sure rotor spins freely.
	7. Installed too close to fittings	Install correctly. See Installation Section.
	8. Installed too close to motors or electrically "noisy" environment	Install correctly. See Installation Section.
B. READOUT FADED, BLANK OR LOW BATTERY MESSAGE APPEARS	1. Batteries weak, dead or not connected	Remove computer and replace batteries. Install computer again, making sure that the seal seats evenly around the computer and turbine housing.
	2. Computer defective	Contact the factory.
C. NORMAL FLOWRATE BUT METER DOES NOT COUNT	1. Field Calibration not performed correctly	Field calibrate again or select Factory Calibration.
	2. Rotor stuck or damaged	Remove meter. Lubricate turbine bearings with WD-40® or similar penetrating lubricant through small holes in turbine supports. Make sure rotor spins freely. If rotor cannot be loosened, contact the factory.
	3. Teflon® tape or other material wrapped around rotor	Remove meter. Clear material from rotor. Make sure rotor spins freely.
	4. Computer defective	Contact the factory.

TROUBLESHOOTING (CONTINUED)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
D. REDUCED FLOWRATE & METER DOES NOT COUNT	1. Meter clogged with dried liquids	Remove meter. Clean carefully with WD-40® or similar penetrating lubricant. Make sure rotor spins freely.
E. CANNOT GET METER INTO FIELD CALIBRATION	1. Wrong button sequence	Hold down CALIBRATE and DISPLAY for 3 seconds. Proceed with calibration according to the Calibration Section.
	2. Computer circuit board defective	Replace computer. Contact the factory.
F. METER CONNECTIONS LEAK	1. Meter installed without thread sealant	Remove meter. Wrap male connections with 3 to 4 wraps of thread tape or compatible sealing compound. Install again.
	2. Connecting threads damaged	Remove meter and inspect threads. Replace damaged connections. If meter threads are damaged, contact the factory.
	3. Meter housing	Inspect housing for cracks. If cracks present, contact the factory.

METER SPECIFICATIONS

The following specifications apply to all models and materials.

Operating Temperature:
0° to +129° F (-18° C to +54° C)
(For temperatures up to 250° F, contact factory)

Storage Temperature:
-40° F to +158° F (-40° C to +70° C)

Accuracy:
Low Flow models:
Factory Calibration: N/A*
Field Calibration: ±1.5% of reading
(Low Flow meters must be field calibrated)

One inch and two inch models:
Factory Calibration: ±1.5% of reading
Field Calibration: ±1.0% of reading

Filter Screens:
Low Flow models:
Use a 25 micron or .005 inch screen, 120 mesh.

One inch and two inch models:
Use a 500 micron or .018 inch screen, 35 mesh.

Wetted Materials:
Rotor & Supports: Nylon
Signal Generators: Ferrite
Shaft: Tungsten Carbide
Journal Bearings: Ceramic
Retaining Rings: Stainless Steel
Housing: Nylon or Aluminum

Turbine Housing/ Rotor Support Materials:
Nylon Housing / Nylon
Aluminum Housing / Nylon

The following specifications are dependent upon housing materials.

Pressure Rating:

Aluminum: 300 PSIG (20.7 bar)
Nylon: 150 PSIG (10.3 bar)

Recommended Chemicals:

Aluminum Models:
Are recommended for use with petroleum products, and should not be used with water. Please verify chemical compatibility with all wetted parts.

Nylon Models:
Are recommended for use with water or non-aggressive chemicals.

** Accuracy can vary up to ±5% depending on installation and fluid type. Field calibration is recommended for best accuracy.*

	Low Flow Model	**1 Inch Model**	**2 Inch Model**
Units	US gallons, & Litres	US gallons, & Litres	US gallons, & Litres
Flow Range	0.3 - 3 GPM 1 - 11 LPM	3 - 50 GPM 11 - 190 LPM	30 - 300 GPM 114 - 1,135 LPM
Threads	NPT	NPT	NPT
Inlet and Outlet	1 inch	1 inch	2 inch
Internal Diameter	1/4 inch	1 inch	2 inch
Design Type	Paddlewheel	Turbine	Turbine
Minimum Readout Total	0.001	0.001	0.001
Maximum Readout Total	999,999 x 100	999,999 x 100	999,999 x 100
Pressure Drop at Maximum Flowrate	2 PSIG @ 3 GPM .14 bar @ 10 LPM	5 PSIG @ 50 GPM .35 bar @ 190 LPM	7 PSIG @ 300 GPM .48 bar @ 1,000 LPM
Dimension - Length - Height - Width	4 in. (10.2 cm) 2.5 in. (6.4 cm) 2 in. (5.1 cm)	4 in. (10.2 cm) 2.5 in. (6.4 cm) 2 in. (5.1 cm)	6 in. (15.2 cm) 4.25 in. (10.8 cm) 3 in. (7.6 cm)

Q9 COMPUTER ELECTRONICS

SPECIFICATIONS

MECHANICAL	
Housing Material	Transparent Amorphous Nylon
Operating Temperature	+0°F to +129°F (-18°C to +54°C) If wider operating temperature ranges are desired, reference information on GPI® Remote Kits.
Storage Temperature	-40°F to +158°F (-40°C to +70°C)
ELECTRICAL	
Input Pulse Rate	Minimum Pulse In: 0 Hz Minimum Coil Input: 10 Hz Maximum Coil Input: 3 KHz
K-Factor	Minimum: 0.001 pulses/unit Maximum: >999,999 pulses/unit
Field Calibration Correction	Minimum: -99.999% Maximum: +99.999%
Readout Totals	Minimum Display: 0.001 Maximum Display: 999,999 (x100)
Field Calibration	Yes
Power	Internal Power Supply: (2) Alkaline AAA batteries @ 1.5-volts each Battery Life: 2+ years
STANDARD FEATURES INCLUDE	
• (2) Totalizing Registers • (1) Factory Calibration Curve • (1) Field Calibration Curve	
COMPUTER ELECTRONICS TERMINAL CONNECTIONS	

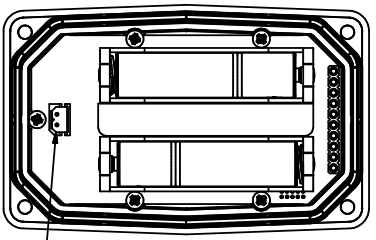


Figure 3

SPECIFICATIONS (CONTINUED)

DIMENSIONS			
Length "A"	Height "B"	Height (Mounted) "C"	Width (Widest Point) "D"
3.40 in. (8.6 cm)	0.85 in. (2.1 cm)	0.72 in. (1.8 cm)	2.14 in. (5.4 cm)

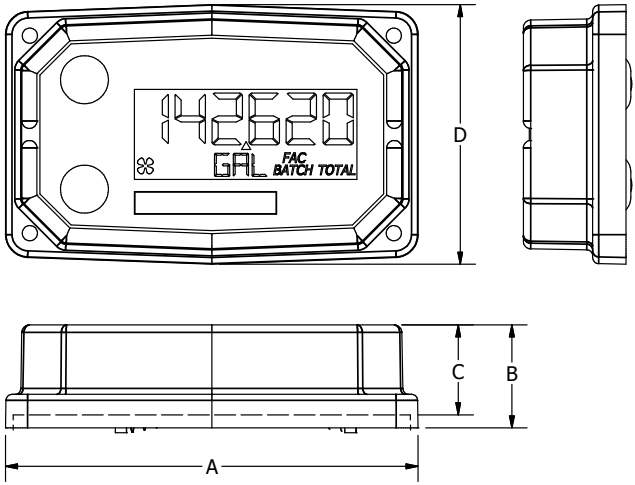


Figure 4

COMPUTER DISPLAY FEATURES

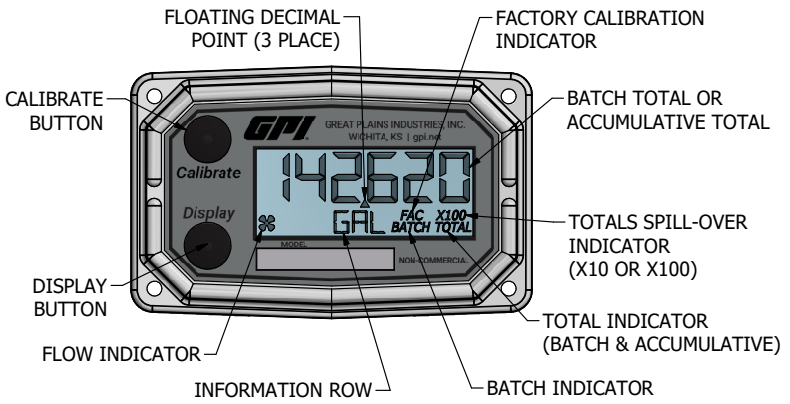


Figure 5

SPECIFICATIONS (CONTINUED)

AGENCY APPROVALS

ELECTRONIC DIGITAL METER
GREAT PLAINS INDUSTRIES, INC.
5252 E. 36TH ST. NORTH
WICHITA, KANSAS 67220 U.S.A

FM APPROVED

FM16CA0148X INTRINSIC SAFETY FOR HAZARDOUS LOCATIONS. SECURITE INTRINSEQUE.
CLASS I, II DIV. 1 GROUPS ABCDEFG,
T4 at Ta= -40° to +54°C

IP65 Rated

CE 2809

FM13ATEX0016X

IECEx FMG 13.0005X

SERIAL NUMBER AND DATE CODE ON PRODUCT

Ex II 1 G Ex ia IIC T4 Ga Ta= -40° to +54°C

INTRINSICALLY SAFE FOR
CLASS I, II, III, DIV. 1,
GROUPS ABCDEFG,
T4 Ta= -40° to +54°C
NONINCENDIVE
FOR CLASS I, II, III, DIV. 2,
GROUPS ABCDFG, T4 Ta= -40° to +54°C

FM APPROVED

WARNING:
See Owner's Manual for Warnings and Cautions Before Installation.

GREAT PLAINS INDUSTRIES, INC., 5252 E. 36TH ST. NORTH, | WICHITA, KANSAS 67220 U.S.A

CAUTION

Use Only These Batteries:
Energizer® E92 / EN92 Alkaline
Duracell® MN2400 Alkaline
Size: AAA Voltage: 1.5V

Warning: Wipe only with damp cloth.

WARNING: TO PREVENT IGNITION OF HAZARDOUS ATMOSPHERE, BATTERIES MUST ONLY BE CHANGED IN NONHAZARDOUS LOCATION.
AVERTISSEMENT: AFIN DE PRÉVENIR L' INFLAMMATION D' ATMOSPHÉRES DANGEREUSES, NE CHANGER LES BATTERIES QUE DANS DES EMPLACEMENTS DÉSIGNÉS NON DANGEREUX.

REMOTE KIT ASSEMBLY (113275-10)

ELECTRONIC DIGITAL METER GREAT PLAINS INDUSTRIES, INC. WICHITA, KANSAS USA

FM13ATEX0016X IECEx FMG 13.0005X

Ex II 1 G Ex ia IIC T4 Ga Ta= -40° to +54°C

CE 2809

SERIAL NUMBER INSIDE PRODUCT

FM APPROVED

FM16CA0148X INTRINSIC SAFETY FOR HAZARDOUS LOCATIONS. SECURITE INTRINSEQUE. CLASS I, II, DIV. 1 GROUPS ABCDEFG, T4 AT Ta=54°C.

INTRINSICALLY SAFE FOR CLASS I, II, III, DIV. 1, GROUPS ABCDEFG, T4 Ta=54°C NONINCENDIVE FOR CLASS I, II, III, DIV. 2,GROUPS ABCDFG, T4 Ta=54°C When Installed in Accordance with Manual 920695-2

FM APPROVED

NOTE: When a component with Approval Agency ratings is mated to another component with the same Approval Agency ratings, the combination may gain environmental approvals.

When one of the components has lessor or no Approval Agency ratings, the resultant combination assumes the ratings of the lessor rated component.

If one component has no ratings, the resultant combination has no ratings.

Specific Conditions of Use

1. All computer assemblies are to be used with GPI battery 902004-02 except Q1, Q9, and R9 versions which use Energizer E92 / EN92, or Duracell MN2400 Alkaline batteries.

2. GPI remote kit assembly 113275-1 may be used with the meter when installed in accordance with GPI Manual No.920507-01. GPI Remote Kit Assembly 113275-10 may be used with the meter when installed in accordance with GPI Manual No. 920507-02.

3. The apparatus enclosure may contain aluminum which is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

4. Part of the enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned with a damp cloth.

INSTALLATION

PRODUCT DESCRIPTION

This computer electronics is designed specifically for use on GPI® Turbine Housings. It is also designed to work with several accessory output modules.

The CMOS, microprocessor-based electronics have extremely low power requirements and data retention capabilities in both RAM and ROM. Information is clearly displayed on a large 6-digit LCD readout with three-point floating decimal for totals from .001 to 999,999 (x1), 9,999,990 (x10), or 99,999,900 (x100). All operations are easily accessed with the two buttons on the front panel.

In a GPI turbine meter, liquid flows through the turbine housing causing an internal rotor to spin. As the rotor spins, an electrical signal is generated in the pickup coil. This pulse data from the turbine is translated into calibrated flow units shown on the computer's display readout.

INSTALLATION

Before installation, ensure your computer model meets your specific needs. Refer to the Specifications Section to confirm required features. The model number of your computer is displayed on the outside wall of the computer housing and also inside the computer housing on the floor of the battery holder.

If you ordered your computer electronics with a turbine body, the electronics are installed at the factory.

If you ordered your computer separately as a replacement, simply mount the computer on your turbine body with the four screws at the corners of the faceplate. Make sure the seal is fully seated before tightening the screws.

If you ordered the computer with a turbine body and an accessory module, please review and thoroughly understand all installation instructions before proceeding.

All GPI turbine meters are designed to measure flow in only one direction. The direction is indicated by the arrow on the turbine outlet port. If the computer display is upside down in your installation, remove the four screws, turn the display 180 degrees and reinstall the screws. (See Figure 6)

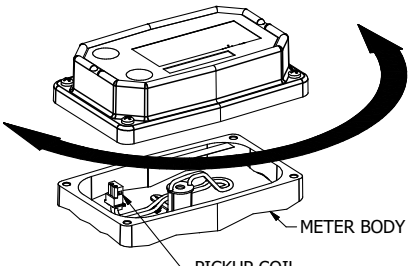


Figure 6

NOTE: When rotating the computer display, it is not necessary to disconnect the pickup coil connector, however, care should be taken to avoid inadvertent strain on the connector wires.

COMPUTER DISPLAY

All operations are revealed on the LCD using the large 6-characters in the top row and smaller characters and symbols in the second row. These characters and symbols indicate information regarding totals, flow, calibration, units of measure and operational messages.

Push button operation varies dependent upon the various modes of operation, i.e. Normal Operation mode and Field Calibration mode. Their operation will be described in their respective sections.

COMPUTER DISPLAY

When batteries are installed, the computer is on continuously and always ready to perform.

The computer is powered by field replaceable commercially available batteries. Reference the computer maintenance section for battery replacement details.

Figure 7

When batteries are initially installed or replaced, the initialization routine will start the LCD display blank, then display “HELLO” on the top row and “Q9Disp” on the information row for one second. (See Figure 7)

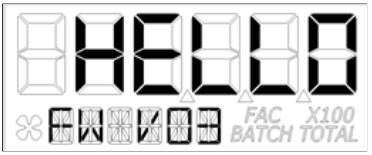


Figure 8

The LCD will then display “HELLO” on the top row and “FW Vxx” on the information version of the software installed on the display. Example: “FW V03” indicates software version 3 installed on the display row for one second. The Vxx will be the (See Figure 8)

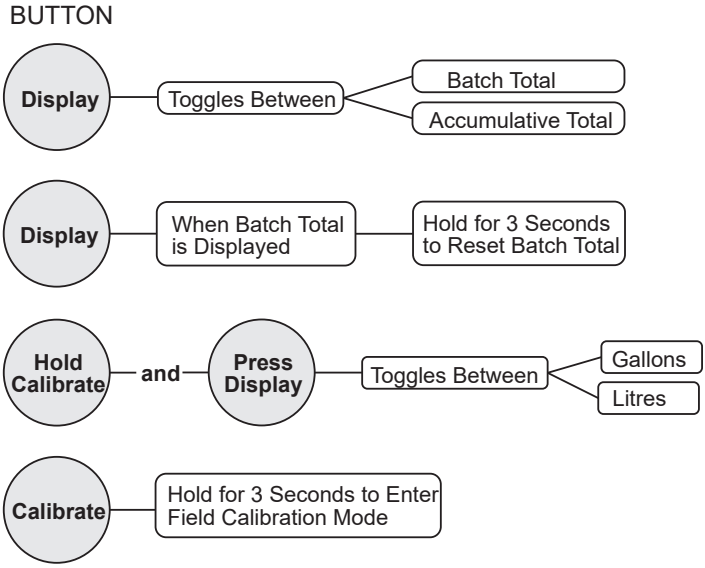
GENERAL

The computer maintains two totals; Batch total and accumulative total. The batch total can be reset to measure flow during a single use. The accumulative total provides continuous measurement and can only be reset by removing the batteries, holding down the Display button, and replacing the batteries.

The button usage map on the next page is useful for understanding where the various menus are located within the software programming and the route to get to a specific menu. The map is followed by user instructions explaining each menu.

NORMAL OPERATION MODE

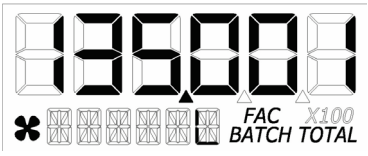
Button Usage Map - Normal Operation Mode



Button Operation - Normal Operation Mode

Display Button: Toggle between batch total and accumulative total.

When a total is displayed, momentarily pressing Display button toggles the top row of large display digits between batch total and accumulative total. The information row will change to the proper units and the corresponding icons will also be shown, i.e. TOTAL or BATCH TOTAL. (See Figure 9)



(Batch Total - Litres)

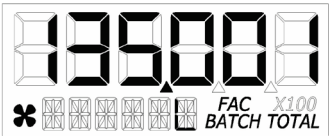
(Batch Total - Gallons)

Figure 9

NORMAL OPERATION MODE (CONTINUED)

Display Button: Batch total reset

When a batch total (see Figure 10-1) is displayed, press and continue to hold Display button for 3 seconds; the software will display a three second count down, then reset the batch total to zero. (See Figures 10-2 thru 10-4)



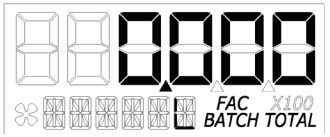
NOTE: If Display button is released prior to count down completion, the software returns to batch total screen. (See Figure 10-1)

Figure 10-1

Figure 10-2

NOTE: After count down completes, display will show 0.000 until user releases Display button. (See Figure 10-3)

Figure 10-3



NOTE: After Display button is released, the display will return to Batch Total screen and will increment the total if flow is detected. (See Figure 10-4)

Figure 10-4

NOTE: When the accumulative total is displayed in Normal Operation Mode, it cannot be reset using the Display button. Accumulative total can only be reset by removing the batteries, holding down the Display button, and replacing the batteries. If the user attempts to reset it using the Display button, the software will display a “Reset Denied” message on the LCD until the button is released. (See Figure 10-5).

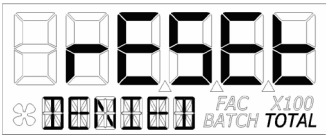


Figure 10-5

FIELD CALIBRATION MODE (CONTINUED)

Field Calibration Method

General

The field calibration method may be set by the user, and can be changed or modified at any time using a field calibration method described in this section. Totals or flowrate derived from the field calibration are being invoked when the (FAC) icon is no longer visible below the 6-digit display.

Factory calibration settings are programmed into each computer during manufacturing, using Stoddard test solvent at 70° F (21° C) for meters up to 1 inch. Meters 1-1/2 inch and larger are factory calibrated using water at 70° F (21° C).

Settings are correct for light liquids such as water, gasoline or diesel. Readings using the factory calibration (FAC) may not be accurate in some situations, for example, "heavy" liquids such as motor oil, under extreme temperature conditions, non-standard plumbing configurations or with fluids other than mentioned above.

For improved accuracy under such conditions, the computer allows for field calibration, that is, user entry of custom calibration parameters. A "single point" field calibration curve may yield acceptable accuracy when used in a non-standard application, however, the computer is capable of programming a “five point” field calibration curve.

NOTE: If the calibration method is changed when in calibration mode, i.e., not using the default factory calibration (FAC), the programming will allow the user to adjust the user programmable calibration table for the calibration method selected. This is done by shunting the user to the field calibration method entry menu specific to that calibration method upon exit from the calibration mode.

Verify Accuracy before Beginning Field Calibration

For the most accurate results, dispense at a flowrate which best simulates your actual operating conditions. Avoid "dribbling" more fluid or repeatedly starting and stopping the flow. This can result in less accurate calibrations. Make sure you meet the meter's minimum flowrate requirements.

- Low Flow meter: 0.3 GPM (1.1 LPM)
- 1 inch meter: 3.0 GPM (11 LPM)
- 2 inch meter: 30 GPM (113 LPM)

The use of a uniformly dependable, accurate calibration container is recommended for the most accurate results. A five gallon calibration container is available in the parts section of this manual. For best results, the meter should be installed and purged of air before field calibration.

Due to high flowrates on meters 2 inch and larger, it is strongly recommended that field calibration be completed with a combination of volume and weight determined with fine resolution scales.

FIELD CALIBRATION MODE (CONTINUED)

Field Calibration Method

At the beginning of the calibration method entry menu, the software will allow the user to start the calibration process or to exit back to normal operation. (See Figures 11-1 & 11-2)

The bottom row of characters will be in focus to indicate that the user can select between either “Start” or “Exit” by advancing focus.

Figure 11-1

If “Start” is in focus when advancing to the next menu, the software will automatically advance to the calibration menu for the calibration method the user previously selected.

Figure 11-2

If “Exit” is in focus when advancing to the next menu, the display will return to normal operation.

Display Dispense Method

Dispense/Display is a field calibration method by which the user will dispense a known volume of fluid and the software will keep track of the pulse count during the dispense operation.

The user will then enter the known volume into the display and the software will calculate a K-factor for the volume dispensed.

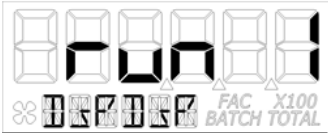


Figure 12-1

The first screen in this calibration method will show “run 1” indicating that computer is waiting for flow to start. (See Figure 12-1)

NOTE: Pressing any single button while on this screen will not have any effect. Pressing both buttons and holding will allow the user to exit calibration mode.

FIELD CALIBRATION MODE (CONTINUED)

Figure 12-2

Begin dispensing into a container of known accurate volume. As soon as pulses are detected by the software, the screen will switch to display the volume being dispensed on the top row and the volume unit on the bottom row. (See Figure 12-2)

When the user is finished with the run, press and hold the Display button until the left most digit begins to flash indicating it is in focus, then release the Display button.

Pressing the Calibrate button will increment the digit in focus. Pressing the Display button will advance focus to the next digit.

Holding Display and pressing Calibrate will lock in the entered volume. (See Figure 14-2)

The software will then calculate the K-factor for the volume entered based on the pulse count for the run and the volume entered. The average frequency and the K-factor will be entered into the custom user K-factor table for run 1.

Exit Dispense Display Method

This menu is used to indicate to the user they are exiting the field calibration mode menu. The user can exit any of the calibration methods at any time. To exit, press and hold the **Display** and **Calibrate** buttons simultaneously for 3 seconds; the software will display a three second count down (see Figure 14-1), then reset to show the exit display. (See Figure 14-2)

Figure 14-1

Figure 14-2

NOTE: After 3 seconds, “FldCAL” will then be displayed on the top row and “Exit” on the bottom row (see Figure 14-2) until the user releases both buttons. The software will store the sorted table of frequencies and K-factors.

COMPUTER MAINTENANCE

Batteries

The computer electronics are powered by alkaline batteries. Removing the batteries before storing the meter will extend battery life since the computer is always on (either standby or active) when the batteries are installed.

If the meter's readout should become dim, blank or the low battery message appears (see below), the batteries should be replaced.

NOTE: If the battery life is sufficiently low, “LOWBAT” will be displayed in the message area on the bottom row of characters. This low battery message will be displayed automatically without running a diagnostic battery check.

Battery Replacement Information

The computer is shipped with (2) alkaline AAA size batteries (1.5-volts each) installed. The installed batteries are Agency Approval rated for use with this electronic device.

Battery replacements are readily available as an off-the-shelf item. To maintain the Agency Approvals of this device, and maintain the GPI warranty, the batteries listed below are approved for use.

Alkaline (AAA size, 1.5-volts each)
Energizer, Alkaline, E92 or En92
Duracell, Alkaline, Mn2400

Do not mix brands or technologies. Do not mix old and new batteries. Do not use rechargeable batteries.

Open battery cells should be disposed of in accordance with local regulations.

COMPUTER MAINTENANCE (CONTINUED)

When batteries are disconnected or fail, the computer memory will retain the batch total, accumulative total, factory calibration curve, and field calibration curve indefinitely.

It is strongly recommended that battery checks and terminal cleaning be a part of a routine maintenance schedule. Battery terminals should be cleaned annually. Batteries can be replaced without removing the meter from the piping system.

Replace Batteries

1. Remove the (4) corner screws attaching the computer electronics to the meter and lift the computer electronics from the meter.
2. Remove the batteries.
3. Check the battery terminals and remove any corrosion.
4. Install the new batteries and make sure the positive posts are positioned correctly. When the batteries are installed correctly, the computer powers on automatically and the display will show information.
5. Make sure the seal is fully seated before placing the computer electronics back on the turbine. Tighten the (4) screws previously removed.
6. Do not clean exterior of computer assembly with Isopropyl Alcohol.

PARTS

Replacement Kits & Accessories

Replacement Kits are available for turbine assemblies and computer assemblies. Individual components within these assemblies, such as rotors, signal generators, and buttons are not available. The factory will determine the exact Turbine Assembly or Computer Assembly you need based on your model and serial number.

Other replacement kits and accessories can be ordered with the part numbers below.

Part No.	Description
901002-52	Seal
116000-1	Large (5 gallon) Calibration Container (Note: Calibration containers are for use with water based fluids. Do not use with fuel products.)

SERVICE

For warranty consideration, parts, or other servicing information, please contact your local distributor. If you need further assistance, call the GPI Customer Service Department in Wichita, Kansas, during normal business hours.

1-800-835-0113

To obtain prompt, efficient service, always be prepared with the following information:

1. The model number of your meter.
2. The serial number of your meter.
3. Specific information about part numbers and descriptions.

For warranty work always be prepared with your original sales slip or other evidence of purchase date.

Returning Parts

Please contact the factory before returning any parts. It may be possible to diagnose the trouble and identify needed parts in a telephone call or letter. GPI can also inform you of any special handling requirements you will need to follow covering the transportation and handling of equipment which has been used to transfer hazardous or flammable liquids.

⚠ CAUTION

Do not return meters without specific authority from the GPI Customer Service Department. Due to strict regulations governing transportation, handling, and disposal of hazardous or flammable liquids, GPI will not accept meters for rework unless they are completely free of liquid residue.

⚠ CAUTION

Meters not flushed before shipment can be refused and returned to the sender.

Q9 Computer Electronics:

CE RoHS 2002/95/EC FM APPROVED IECEx ATEX

FM APPROVED

Factory Mutual Approved
Intrinsically Safe for Class I, II, III, Division 1, All Groups

Intrinsically Safe approval only applies when used with GPI® FM Approved meter

Q9 Computer Electronics when installed on a GPI Fm Approved meter

CE RoHS 2002/95/EC FM APPROVED IECEx ATEX

IP65 FM APPROVED

Factory Mutual Approved
Intrinsically Safe for Class I, II, III, Division 1, All Groups

Declaration of Conformity

We declare, that the product:

Product Name:	Electronic Digital Meter
Model Numbers:	03*****
	A1**********
	A2**********
	G2*****9***

Model numbers include all combinations of an alpha-numeric series as illustrated above.

Conforms with the requirements of the Directives below by compliance with the Standards subsequently listed:

1. Council Directive 2004/108/EC (until April 19, 2016) and Directive 2014/30/EU (from April 20, 2016) relating to Electro-Magnetic Compatibility.

   EN 61000-6-2:2005
   EN 61000-6-3:2007/A1:2011

2. Council Directive 94/9/EC (until April 19th, 2016) and Directive 2014/34/EU (from April 20th, 2016) relating to equipment or protective systems intended for use in potentially explosive atmospheres.

   EN 60079-0:2018
   EN 60079-11:2012
   EN 60529+A1:2000

3. Council Directive 2011/65/EU and 2002-95-EC as amended (RoHS Directive) relating to the restriction of certain hazardous substances in electrical and electronic equipment.

Supplementary Information:

- This product meets an (Ingress Protection) IP65 rating.
- This product has insufficient internal volume size or pressure ratings to meet a pressure directive.
- This product is not recommended for custody transfer or application where levying by consumption takes place.

I the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Signature: Victor Lukic

Full Name:	Victor Lukic
Position:	President
	Great Plains Industries, Inc.
Place:	Wichita, KS USA
	March 2016

Notified Body: FM Approvals Europe Ltd.
One Georges Quay Plaza
Dublin, Ireland D02 E440

Identification No: 2809

EC-Type Examination Certificate No: FM13ATEX0016X

GREAT PLAINS INDUSTRIES GPI®
5252 E. 36th St. N. Wichita, KS 67220-3205
316-686-7361 / f. 316-686-6746 / GPI.net

Limited Warranty Policy

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, contact the GPI Customer Service Department at 316-686-7361 or 888-996-3837. Or by mail at:

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

If you are outside North or South America contact:

Great Plains Industries – Australia

1/16 Atkinson Road,
Taren Point NSW 2229, Sydney, Australia

The company shall, notify the customer to either send the product, transportation prepaid, to the company at its office in Wichita, Kansas, or to a duly authorized service center. The company shall perform all obligations imposed on it by the terms of this warranty within 60 days of receipt of the defective product.

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).

FM APPROVED CE FM APPROVED IECEx RoHS 2002/95/EC

Ex ATEX NEMA 4 *(IP65)*

Wichita · Sydney GREAT PLAINS INDUSTRIES GPI®

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