

WMP-Series

Plastic-Bodied Magmeter Instructions



General Information

General Information Page 3
Features Page 4
Specifications Page 4
Dimensions Page 5
Flow Range..... Page 5

Installation

Piping Conditions Page 6
End Connections Page 6
Positioning..... Page 6
Straight Pipe Recommendations Page 7
Full Pipe Recommendations..... Page 7

Connections and Operation

Electrical Connections..... Page 8
Cable Connections Page 8
Connections to FT400 series Page 9
Grounding Page 10
Operation..... Page 10

Maintenance and Troubleshooting

Maintenance..... Page 11
Troubleshooting..... Page 11

The WMP-Series meters are full-bore, plastic-bodied electromagnetic flow meters designed for flow and usage monitoring applications in 1, 2, and 3 inch pipe. The polypropylene flow tube offers corrosion resistance to a wide range of chemicals. It's light weight and easy to install or remove from the pipe for inspection.

With no moving parts, the magmeter permits unobstructed flow, minimizing flow disturbances and hence, straight pipe requirements. The WMP-Series can be used in piping configurations where there is little space between the meter and an elbow or valve. The WMP-Series meters are resistant to wear from sand and debris found in ground or surface water. Since there are no bearings or propeller to wear out, downtime, maintenance, and repair costs are kept to a minimum. Because there are no mechanical parts in the flow stream, the meter tolerates high flows without damage.

The hinged, opaque polyethylene cover protects from dust and UV rays, while permitting easy access to the LCD flow

rate and total display. The electronics housing is made of rugged powder-coated diecast aluminum. It can be fitted with cross-drilled screws and seal wire for tamper-evidence. Flow rate and total can be displayed in a variety of units, customer-selected and factory-set.

The **WMP101** is externally powered via a 5-pin connector and the power cable also provides pulse output for use with a variety of Seametrics and other displays and controls for remote reading, data logging, pulse-to-analog conversion, and telemetry applications.

The **WMP104** is a battery-operated unit for use when pulse output is not required. The standard batteries are user replaceable with an approximate 1 year life depending on usage. An extended battery life option offers an estimated 2–4 year life depending on usage.

In the event of DC power loss, or when changing the battery, the WMP is designed to retain the internal settings and flow total.

Features



Polyethylene protective cover

LCD rate and total indicator

Powder-coated diecast aluminum electronics housing

Cross-drilled screws (2) for tamper-evidence (seal optional)

316SS electrodes

Corrosion-resistant glass-filled polypropylene body
Lightweight for easy handling

Seametrics Fitting Kit

Unobstructed Flow

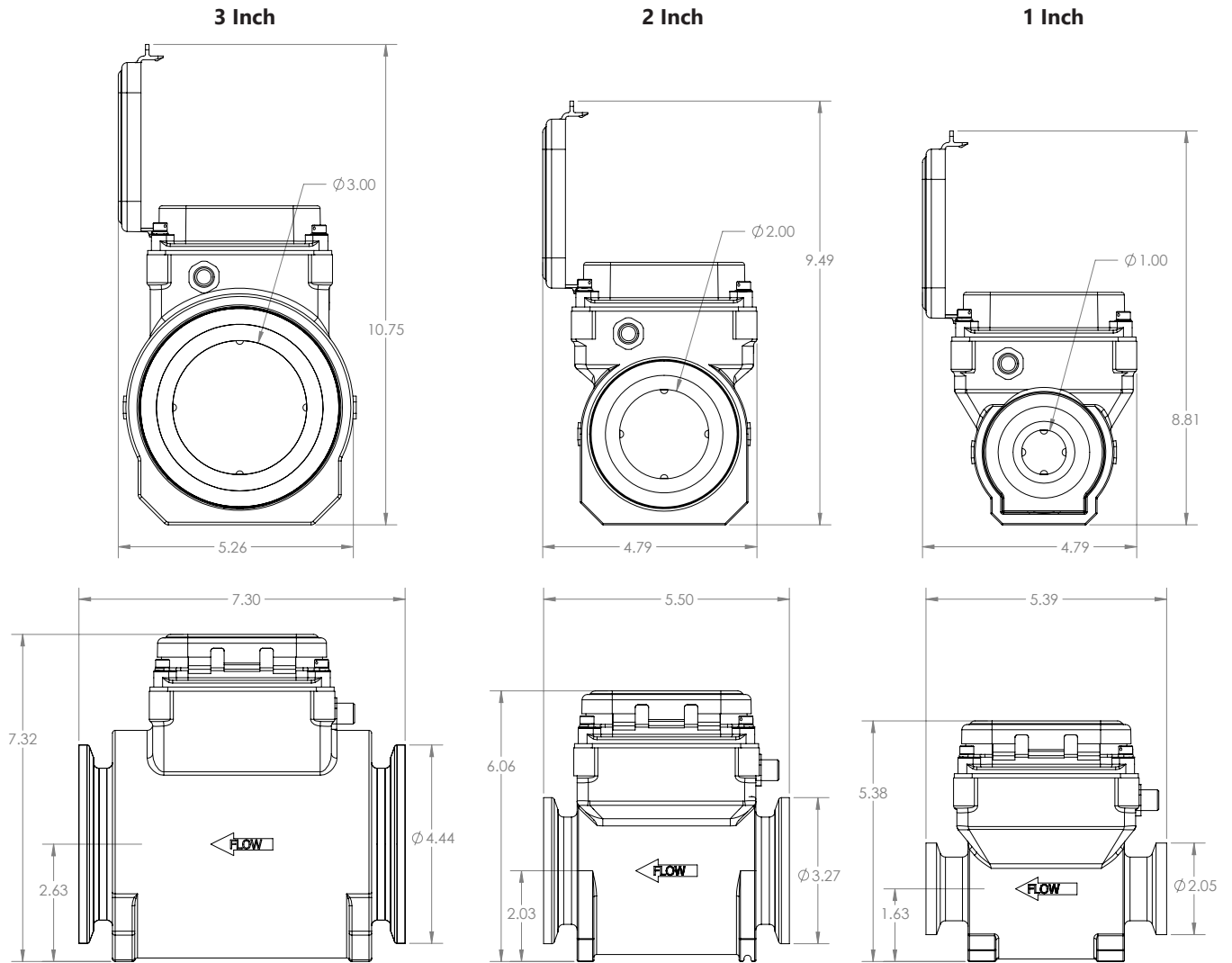
Specifications*

| | | | | | | |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------|
| Pipe Size | 1, 2, or 3 inch full port | | | | | |
| Fittings | 1, 2 or 3 inch flange clamps with NPTF fitting kit | | | | | |
| Pressure | 150 psi or 10.3 bar working pressure @ 70° F | | | | | |
| Operating Temperature Range | Operating: 10° to 130° F (-12° to 54° C), Non-operating: -40° to 176° F (-40° to 80° C) | | | | | |
| Accuracy | ±1% of reading (between 10% and 100% of maximum flow) ±3% of reading (between cutoff and 10% of maximum flow) | | | | | |
| Flow Range | Minimum | 1" : 2.3 gpm (0.145 l/s) | 2" : 6 gpm (0.38 l/s) | 3" : 14 gpm (0.88 l/s) | | |
| | Maximum | 1" : 110 gpm (6.94 l/s) | 2" : 300 gpm (18.9 l/s) | 3" : 670 gpm (42.3 l/s) | | |
| Materials | Body | Glass-filled polypropylene | | | | |
| | Electrodes | 316 stainless steel | | | | |
| | Electronics Housing | Power-coated diecast aluminum | | | | |
| | Display Cover | Polyethylene | | | | |
| Display | Rate | | | Total | | |
| | Digits | 6 | | 8 | | |
| | Units | Gallons/Minute, Million Gallons/Day, Cubic Feet/Second, Cubic Feet/Minute, Liters/Second, Liters/Minute, Million Liters/Day, Cubic Meters/Minute, Cubic Meters/Hour | | Acre-Feet, Acre-Inch, Gallons, Gallons x 1000, Cubic Feet, Liters, Megaliters, Cubic Meters, Cubic Meters x 1000 | | |
| Security | Cross-drilled screws and tamper-evident seal (optional) | | | | | |
| Power | WMP101 | 10–30 Vdc @ 60 mA maximum (15 mA average) Note: Using an unregulated power supply > 18 Vdc may damage the meter due to AC line input voltage fluctuation. | | | | |
| | WMP104 | 6 - AA 1.5V lithium cells, replaceable. Estimated life is 1 year depending on usage (standard) 2 - C 3.6V lithium batteries, replaceable. Estimated life is 2–4 years depending on usage (optional) | | | | |
| Pulse Output Signal (WMP101 only) | | Current sinking pulse, opto-isolated, 32 Vdc maximum @ 10mA maximum | | | | |
| Pulse Rate (WMP101 only) | Low Frequency (-PxU) | 1 unit/pulse out, pulse width of 10 ms, depending on unit selection | | | | |
| | High Frequency (-HF) | 1" | 2" | 3" | Pulse width 1.1 ms, min–max frequency, 3–150 Hz | |
| | | Pulse/Gal | 80 | 30 | | 13 |
| | | Pulse/Liter | 21.14 | 7.93 | | 3.44 |
| Empty Pipe Detection | | Hardware/software, conductivity based | | | | |
| Conductivity | | >20 microSiemens/cm | | | | |
| Environmental | | NEMA 3X, IP64 | | | | |
| Electrical Connection (WMP101 only) | | 5-pin male circular connector, mates to industry standard cable | | | | |

*Specifications subject to change • Please consult our website for current data (seametrics.com).

Dimensions

Dimensions shown without the Seametrics WMP Fitting Kit.



Flow Range

| | 1" | | 2" | | 3" | |
|----------------|---------|-----------|---------|-----------|---------|-----------|
| | Gal/Min | Liter/Sec | Gal/Min | Liter/Sec | Gal/Min | Liter/Sec |
| Minimum | 2.3 | 0.145 | 6 | 0.38 | 14 | 0.88 |
| Maximum | 110 | 6.94 | 300 | 18.9 | 670 | 42.3 |

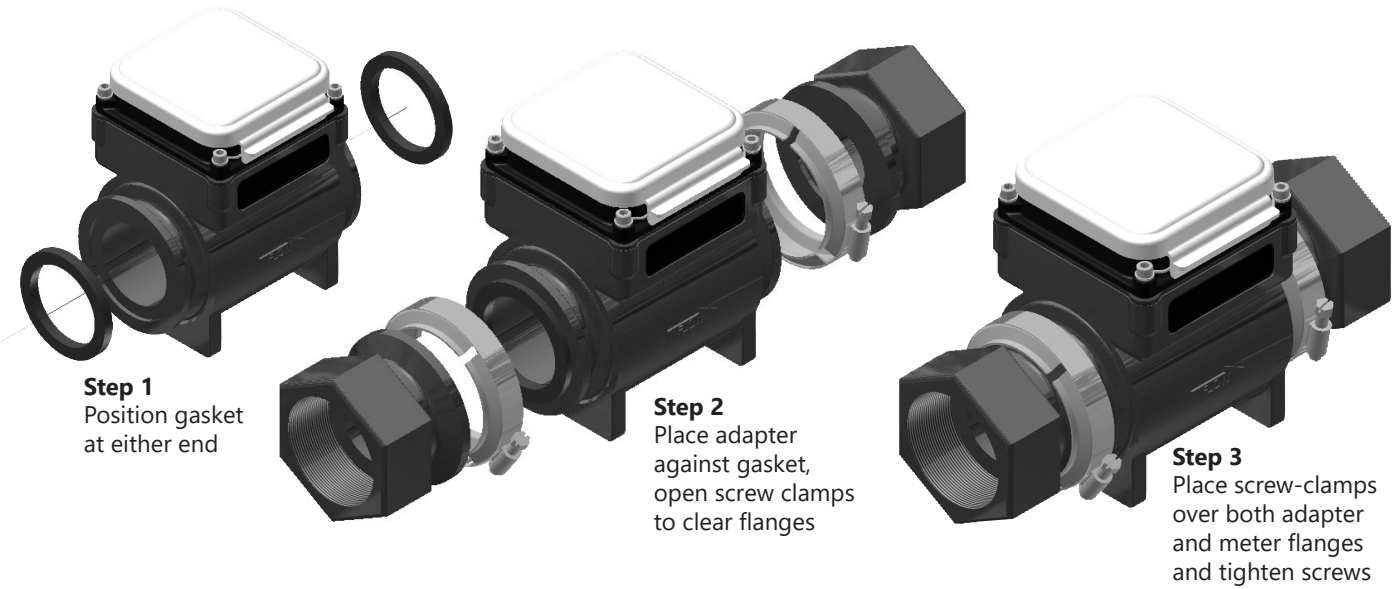
Piping Conditions

It is highly recommended that the meter be installed with a length of straight pipe at least two times the diameter upstream and one diameter downstream. Some piping conditions require more than this. See next page for recommendations.

End Connections

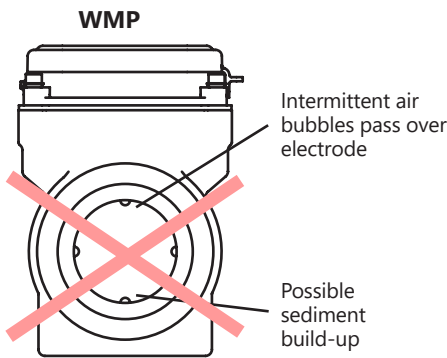
The meter comes with Banjo™ union-type flange connections for ease in servicing the meter. To connect these to piping ends, a variety of kits are available from any Banjo dealer or from Seametrics.

Follow the diagrams below to make the connections.

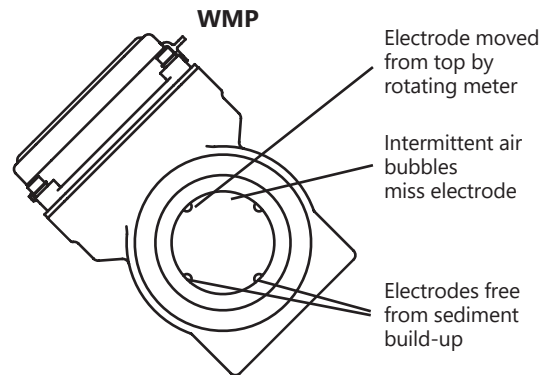


Positioning

This is an all position meter which can be installed either vertically or horizontally, register up, down, or angled. However, entrained air or solids may make some positions preferable to others.



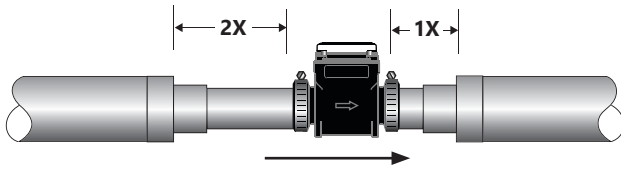
Not ideal:
Air bubbles and sediment on the electrodes can affect accuracy



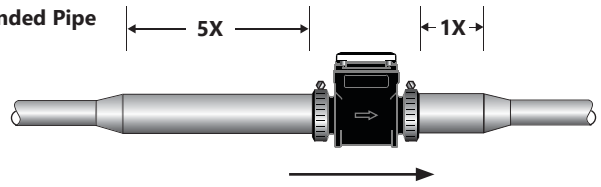
Recommended:
May prevent sediment or bubble problems

Straight Pipe Recommendations (X = pipe diameter)

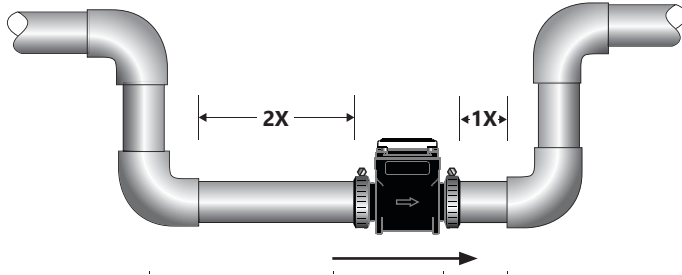
Reduced Pipe



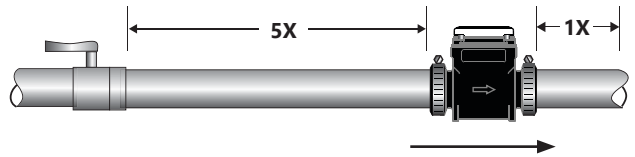
Expanded Pipe



Elbows

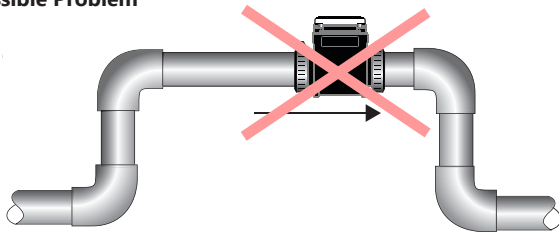


Swirling Flow: Partially Open Butterfly Valve



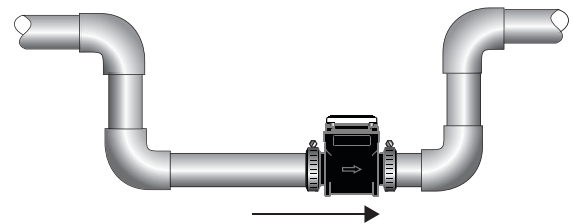
Full Pipe Recommendations

Possible Problem



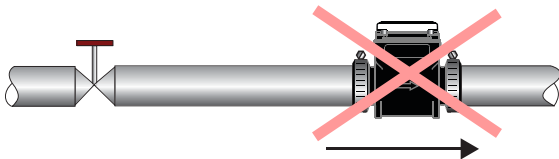
Allows air pockets to form at sensor

Better Installation



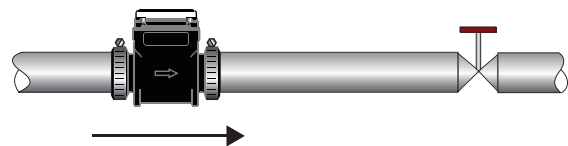
Ensures full pipe

Possible Problem



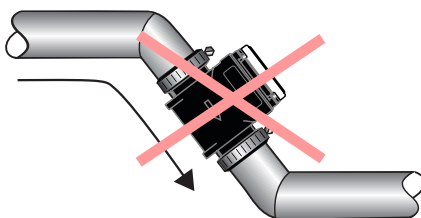
Post-valve cavitation can create air pocket

Better Installation



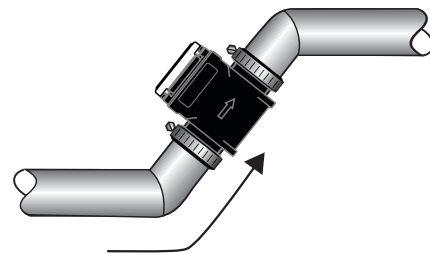
Keeps pipe full at sensor

Possible Problem



Air can be trapped

Better Installation



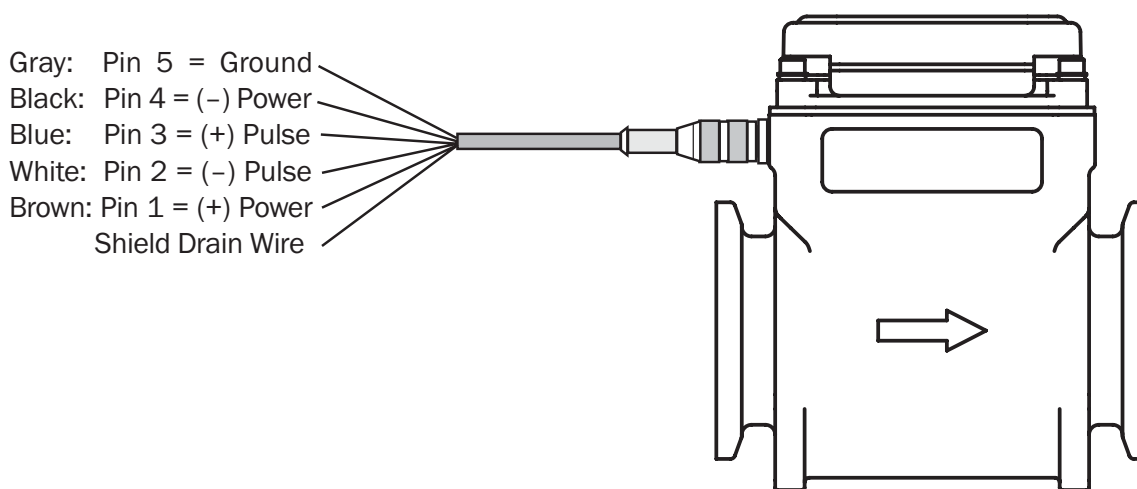
Allows air to bleed off

Electrical Connections

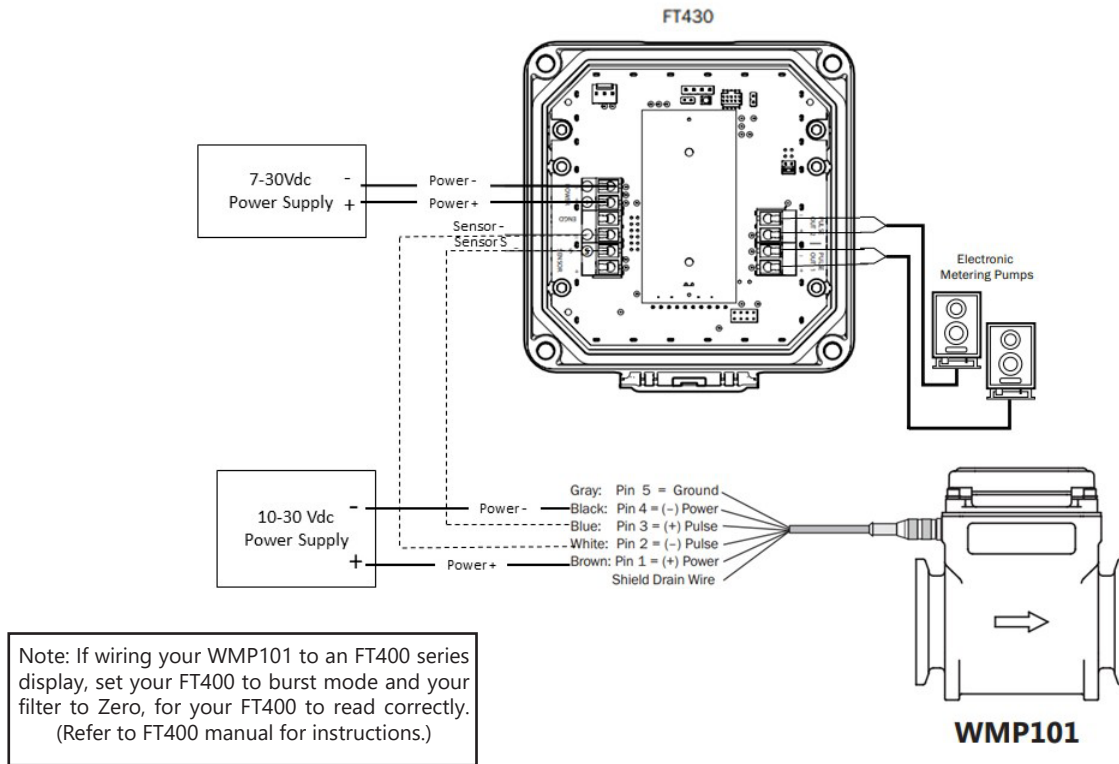
WMP104. The WMP104 is battery-powered, totally self-contained, and does not require any electrical connections (there is no output on the WMP104 model).

WMP101. A connector is provided on the outside of the WMP101. To connect to the meter, plug the cable in and hand tighten the retaining threads. Follow the diagram to make connections. If you are using the pulse output, connect power first and determine that the meter is working properly by observing the display. Then connect the pulse output.

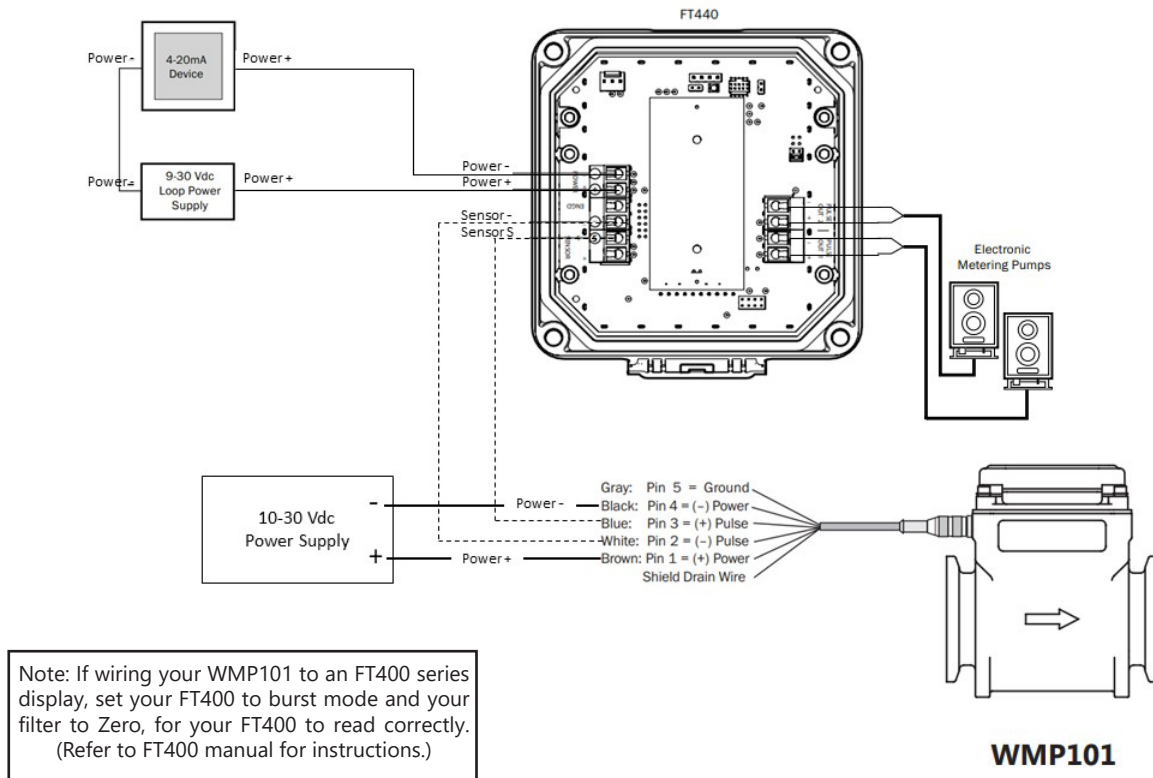
Cable Connections



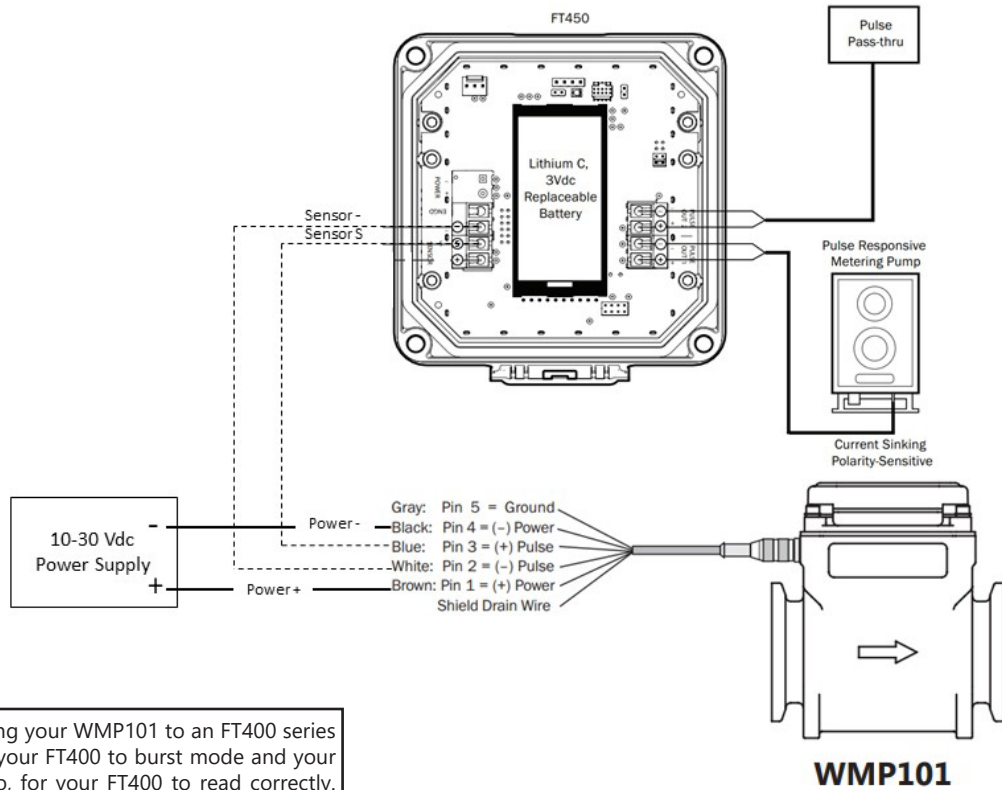
Connections to FT430



Connections to FT440



Connections to FT450



Note: If wiring your WMP101 to an FT400 series display, set your FT400 to burst mode and your filter to Zero, for your FT400 to read correctly. (Refer to FT400 manual for instructions.)

Grounding

Grounding (WMP101). For best performance, especially in electrically noisy environments, the gray ground wire and the bare drain wire should be connected together and to a good earth ground as close to the meter as possible. Metal pipe and fittings in contact with the fluid should also be bonded to the same earth ground with corrosion-resistant connections.

Erratic readings caused by excessive electrical interference may necessitate the installation of additional grounding. If your system piping is all nonconductive pipe, add a short piece of metal pipe just before and just after the meter and attach a 10-gauge wire from that pipe to a good earth and/or system ground.

In a fully mobile system, the grounds of all components of the assembly may need to be bonded together if the meter reads erratically. This may include, but is not limited to the chassis, power plant, trailer, cab, pumps, sprayers, articulating arms, etc

Operation

Display. The display reads flow rate and accumulated total, in the units for which it was ordered. The top line is the total, the bottom line is the rate, and indicators give the units (ac-ft, GPM for instance.) Empty or partially full pipe is automatically detected and is indicated by a reading of " - EP - ".

Battery. The standard batteries (AA lithium 1.5v) are user replaceable with an approximate 1 year life depending on usage. An extended battery life option (C lithium 3.6v) offers an estimated 2-4 year life depending on usage. On the battery-powered WMP104 there is a low-battery indicator ("low bat") when the battery voltage drops below a certain point. Batteries should be changed within four weeks of the appearance of this indicator.

Maintenance

There are no user-serviceable parts in the WMP-Series meters except the batteries in the WMP104.

Battery Replacement. When the “low bat” indicator appears, the batteries should be changed. Either six AA 1.5v lithium cells are required, or if ordered, the two optional C 3.6V lithium cells with integrated wiring harness, depending on power option ordered with meter.

To change the batteries, first remove the four screws which hold the top cover in place. Be careful not to lose the washers. Move the top cover to one side and remove the foam retainer which covers the battery tray or pack.

- For units with AA 1.5v lithium batteries, remove the old batteries from the battery tray and replace them with fresh ones, taking care to follow the polarity indicators in the battery tray.

- For units with the optional C lithium 3.6v batteries, carefully unplug each of the two battery wiring harness connectors. Slip the batteries out from under the elastic retainer, and replace them with the new batteries. Reconnect each of the two wiring harness connectors. The connectors are indexed for correct installation.

Replace the foam retainer, and then put the top cover back in place. Replace the four screws and washers, and then tighten them securely using cross-pattern to evenly compress the gasket.

Note: AA 1.5v lithium batteries can be purchased locally. Contact Seametrics for C lithium 3.6v batteries.



Warning!
Use Extreme Caution not to pinch wiring or other assembly parts under the housing seal—this may cause an ingress of water, voiding the product warranty.



Environmental and Safety Note
Take care to dispose of all batteries in accordance with Federal, State, and Local regulations.

Troubleshooting

| Problem | Probable Causes | Things to try... |
|-------------------------------|-----------------------------------------------------------------|--------------------------------------|
| Blank Display (WMP101) | No power to unit | Check power supply; check wiring |
| Blank Display (WMP104) | Batteries dead or misinstalled | Check polarity; replace batteries |
| Reading “-EP-” | Empty or partly filled pipe or excessive air pockets or foaming | Rearrange piping to ensure full pipe |
| Flow but no flow rate reading | Heavily coated electrodes | Remove meter and wipe electrodes |

SEAMETRICS LIMITED WARRANTY POLICY

The limited warranty set forth below is given by Seametrics, with respect to Seametrics brand products purchased in the United States of America.

Seametrics warrants that products manufactured by Seametrics, when delivered to you in new condition in their original containers and properly installed, shall be free from defects in material and workmanship. **Seametrics products are warranted against defects for a minimum period of two (2) years from date of installation, unless otherwise specified, with proof of install date. If no proof of install date can be provided, warranty period will be two (2) years from date of shipment from Seametrics, as defined on Seametrics' invoice.** Seametrics' obligation under this warranty shall be limited to replacing or repairing the part or parts, or, at Seametrics' option, the products, which prove defective in material or workmanship. The following are the terms of Seametrics' limited warranty:

- a. Buyer must give Seametrics prompt notice of any defect or failure and satisfactory proof thereof.
- b. Any defective part or parts must be returned to Seametrics' factory or to an authorized service center for inspection.
- c. Buyer will prepay all freight charges to return any products to Seametrics' factory, or another repair facility, as designated by Seametrics.
- d. Defective products, or parts thereof, which are returned to Seametrics and proved to be defective upon inspection, will be repaired to factory specifications.
- e. Seametrics will deliver repaired products or replacements for defective products to the buyer (ground freight prepaid) to the destination provided in the original order.
- f. Products returned to Seametrics for which Seametrics provides replacement under this warranty shall become the property of Seametrics.
- g. This limited warranty covers all defects encountered in normal use of Seametrics products, and does not apply to the following cases:
 - i. Loss of or damage to Seametrics product due to abuse, mishandling, or improper packaging by buyer
 - ii. Failure to follow operating, maintenance, or environmental instructions prescribed in Seametrics' instruction manual
 - iii. Products not used for their intended purpose
 - iv. Alterations to the product, purposeful or accidental
 - v. Electrical current fluctuations
 - vi. Corrosion due to aggressive materials not approved for your specific product
 - vii. Mishandling, or misapplication of Seametrics products
 - viii. Products or parts that are typically consumed during normal operation
 - ix. Use of parts or supplies (other than those sold by Seametrics) which cause damage to the products, or cause abnormally frequent service calls or service problems
- h. A new warranty period will be established for repaired products, or products replaced during the original warranty period.
- i. In the event that equipment is altered or repaired by the buyer without prior written approval by Seametrics, all warranties are void. Damage caused by equipment or accessories not manufactured by Seametrics may void the product's warranty.
- j. SOFTWARE: The Seller grants the user a non-exclusive license to use Seametrics' software, according to the following limitations and conditions:
 - i. The user may install the software on one or more desktop or laptop computers.
 - ii. All title and intellectual rights to the software are owned by Seametrics.
 - iii. No copies may be made or distributed except as described above.
 - iv. The user may not modify or reverse-engineer the software.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. NO IMPLIED WARRANTY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIED TO THE PRODUCTS AFTER THE APPLICABLE PERIOD OF THE EXPRESS LIMITED WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY WITH RESPECT TO THE PRODUCTS, SHALL BIND SEAMETRICS. SEAMETRICS SHALL NOT BE LIABLE FOR LOSS OF REVENUES, OR PROFITS, OR INCONVENIENCES, EXPENSE FOR SUBSTITUTE EQUIPMENT OR SERVICE, STORAGE CHARGES, LOSS OF DATA, OR ANY OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE CAUSED BY THE USE OR MISUSE OF, OR INABILITY TO USE THE PRODUCTS, REGARDLESS OF THE LEGAL THEORY ON WHICH THE CLAIM IS BASED, AND EVEN IF SEAMETRICS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL RECOVERY OF ANY KIND AGAINST SEAMETRICS BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT SOLD BY SEAMETRICS AND CAUSING THE ALLEGED DAMAGE. WITHOUT LIMITING THE FOREGOING, YOU ASSUME ALL RISK OF LIABILITY FOR LOSS, DAMAGE, OR INJURY TO YOU AND YOUR PROPERTY AND TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE OF, OR INABILITY TO USE THE PRODUCTS NOT CAUSED DIRECTLY BY THE NEGLIGENCE OF SEAMETRICS.

SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. SIMILARLY, SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF CONSEQUENTIAL DAMAGE, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; HOWEVER, YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

