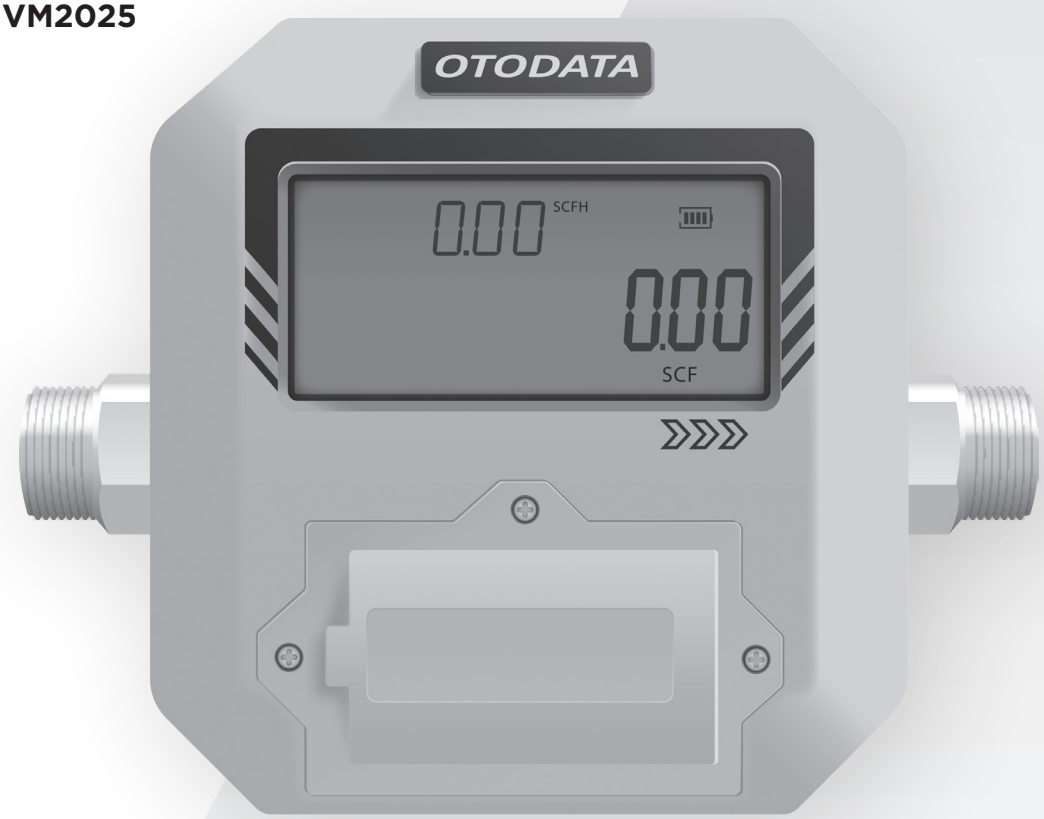
Installation Procedure

LPG Gas Meter Monitor

Models: VM2019, VM2025



GRA-0080-EN_012 IM_VM20XX 2024-06-13

Do not pressure wash

WARNING This monitor has been tested and certified safe for use in Class 1, Zone 1, Group IIB T4 Gb hazardous locations. For indoor and outdoor use. BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NONHAZARDOUS. DO NOT open when an explosive atmosphere is present. The nonmetallic enclosure parts of this equipment may become a spark ignition hazard in the presence of static electricity. The enclosure shall be cleaned only with a damp cloth, and the equipment shall be mounted to avoid building static electric charge from nonconductive process flow, strong air currents, or other potential charging through friction. **INSTALLATION** Always follow your local regulations and standards. If locally required, consult with certified personnel to ensure your installation is compliant.

Support

+1 (514) 673-0244

+1 (844) 763-3344 (toll-free)
support@otodata.com
otodatatankmonitors.com/support

Emergency Support

Available 24/7
1-833-529-9499

Consumption remote reading for LPG.
A monitor to suit your corporate needs.

Input

MEMS-TToF flow measuring, BLE gateway transmission.
Remote Ready Hall Effect Module on applicable models.

Reporting & Outputs

Reporting	Low battery (TM5040 unit only) Temperature
Data Interface	API Email (to supplier and/or consumer) Raw data
Automated Testing	Network status Lead sensor status Battery status (TM5040 unit only)

Dimensions

Height: 14 cm (5.5 in), Width: 20.4 cm (8.03 in),
Depth: 7.5 cm (2.95 in)

Radio Specifications

Gas Meter	Bluetooth
BLE Gateway Monitor	CAT-M1 (NB-IoT coming soon) Dual SIM Bluetooth

Certifications

Gas Meter certified by CSA for use in hazardous locations.
Approved for: Ex ib IIB T4 Gb, Class I, Zone 1, AEx ib IIB T4 Gb

Option

GPS (mobile tank)

Environmental Specifications

Relative humidity range	0% to 100%
Enclosure rating	IP66
Warranty	5+ years
Flow range	P16C: 0.6 to 88 ft^3/Hr P25C: 0.9 to 141 ft^3/Hr P40C: 1.4 to 212 ft^3/Hr
Turn-down ratio	160:1
Accuracy	Class 1.5
Working temperature	-40 to 60°C (-40 ° F to 140 ° F)
Max working pressure	7.25PSI - 50KPa
Power supply	10 years minimal, lithium-ion battery, 3.6V, 19AH
Data interface	BLE
Storage temperature	-30 to 70°C (-22 to 158°F)
Gas compatibility [1]	LPG

Ordering

TM5040BG-VA00-CNEE-VM2019-P16C [2]
Otodata monitor BLE gateway and Gas Meter 3/4"NPT

TM5040BG-VA00-CNEE-VM2025-P25C
Otodata monitor BLE gateway and Gas Meter 1"NPT

TM5040BG-VA00-CNEE-VM2025-P40C
Otodata monitor BLE gateway, Gas Meter 1"NPT and Digital Lead for remote ready dials for tank level monitoring.

TM5040DH-VA00-CNEE-VM2019-P16C
Otodata monitor BLE gateway, Gas Meter 3/4"NPT and Digital Lead for tank level monitoring.

TM5040DH-VA00-CNEE-VM2025-P25C
Otodata monitor BLE gateway, Gas Meter 1"NPT and Digital Lead for tank level monitoring.

TM5040DH-VA00-CNEE-VM2025-P40C
Otodata monitor BLE gateway, Gas Meter 1"NPT and Digital Lead for tank level monitoring.

[1] Natural Gas, coming soon. [2] Change CNEE for client's branding code if available.

ATTENTION

Carefully read this manual before operating this product.

This product is designated for LPG metering at the applicable pressure.

Cautions for the specified hazardous conditions

DO NOT weld on a gas pressurized line. Close the upstream valve first and release the remaining gas before proceed.

DO NOT open or modify hardware in any way (except for the battery chamber) as it can damage the device and void the warranty.

DO NOT install this device if you suspect any malfunctions or defection.

DO NOT install for any unknown/non-specified fluids as it will damage the device.

DO NOT force the connection. If the thread is not the same as the pipeline, use an adapter or contact Otodata for the correct model.

DO NOT allow unqualified/untrained personnel to perform device maintenance such as calibration, part replacement, and repair.

DO ensure LPG is clean and free of debris and particles that may accumulate inside the flow channel which can result in inaccurate readings, clogging, or other irrecoverable damage.

DO install a filter upstream of the meter if LPG has particles or debris (If particles or debris is detected, it is MANDATORY to install a filter).

DO remain cautious for electrical safety. Even at low voltage, an electrical shock can lead to unexpected damages.

WARNING

Opening and/or altering the device in any way (with the exception of the battery chamber) can lead to malfunction and irrecoverable damage. This will result in the complete forfeit of the warranty terms and will release Otodata of any liability whatsoever.

The product at the time of shipment is fully inspected for product quality and meets all safety requirements.

Additional safety measures during the installation should be applied. This includes but is not limited to leakage verification procedures, mechanical stress compression on the pipe lines.

Upon request, the manufacturer will provide the necessary technical support and/or training of the personnel.

The product is meant to be installed horizontally. Flow direction should be aligned with the arrow marks on the device (directly below LCD screen).

How to Choose Your Otodata Gas Meter

TM5040BG-VA00-CNEE-VM2019-P16C*

Connector thread NPT	Flow (load) range, LPG			
	Minimum Flow reading		Maximum Flow Reading	
	Ft3/hr	BTU/hr	Ft3/hr	BTU/hr
¾”	0.6	1510	88	221,500

Smaller houses, with only a range and a small water heater.
Can read small pilot flames.

- OR -

Small propane engine machines like electric generators up to 10KW

TM5040BG-VA00-CNEE-VM2025-P25C*

Connector thread NPT	Flow (load) range, LPG			
	Minimum Flow reading		Maximum Flow Reading	
	Ft3/hr	BTU/hr	Ft3/hr	BTU/hr
1”	0.9	2265	141	355,000

Medium-sized houses, with range, water heater, small HVAC heater. Will start reading from two or more pilot flames.

- OR -

Propane engine machines like electric generators up to 20KW

TM5040BG-VA00-CNEE-VM2025-P40C*

Connector thread NPT	Flow (load) range, LPG			
	Minimum Flow reading		Maximum Flow Reading	
	Ft3/hr	BTU/hr	Ft3/hr	BTU/hr
1”	1.4	3524	212	533,600

Larger houses, larger water heater and HVAC heater. Not suitable for appliances with small pilot flame.

- OR -

Propane engine machines like electric generators up to 30KW

Otodata Gas meters measure propane vapours in Cubic feet (ft^3) only. Cannot currently measure Natural Gas, nor provide readings in BTU.

* TM5040DH also applicable.

Advantages of Mass Flow Measurement

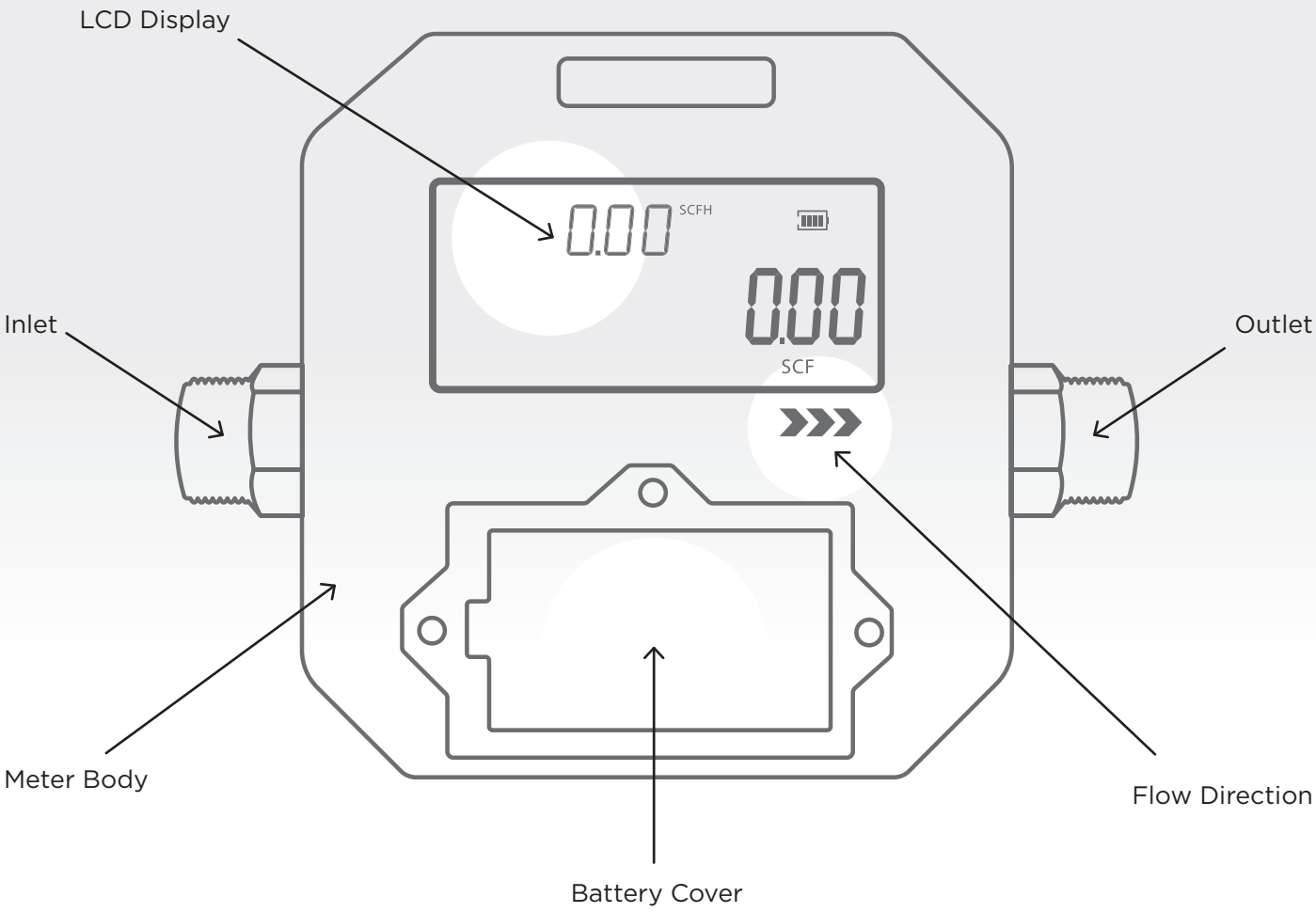
Otodata's Gas Meter measures consumption by mass (not volume) which has several advantages. Notably, measuring consumption by mass allows our gas meter to automatically calculate the real consumption independently of the pressure in the pipelines. It also allows for an automatic compensation to standard temperature (60°F/15°C).

Note: Unlike other mechanical utility meters, the Otodata Gas Meter is not mechanically actuated. Therefore, there is no significant impact on pressure loss.

ATTENTION: This device is only calibrated for propane, and not suitable for use with any other gas unless otherwise indicated. DO NOT surpass 7 PSI MAOP* as this can negatively impact the accuracy of readings.

*MAOP, Maximum Allowable Operating Pressure.

Device Anatomy



Before you begin installation...

a) Upon receipt, carefully inspect the device's packaging for any signs of damage incurred during shipping (if any abnormality is observed, please notify the carrier who shipped the product and inform your sales representative).

b) Upon opening package, inspect the device for any physical damage.

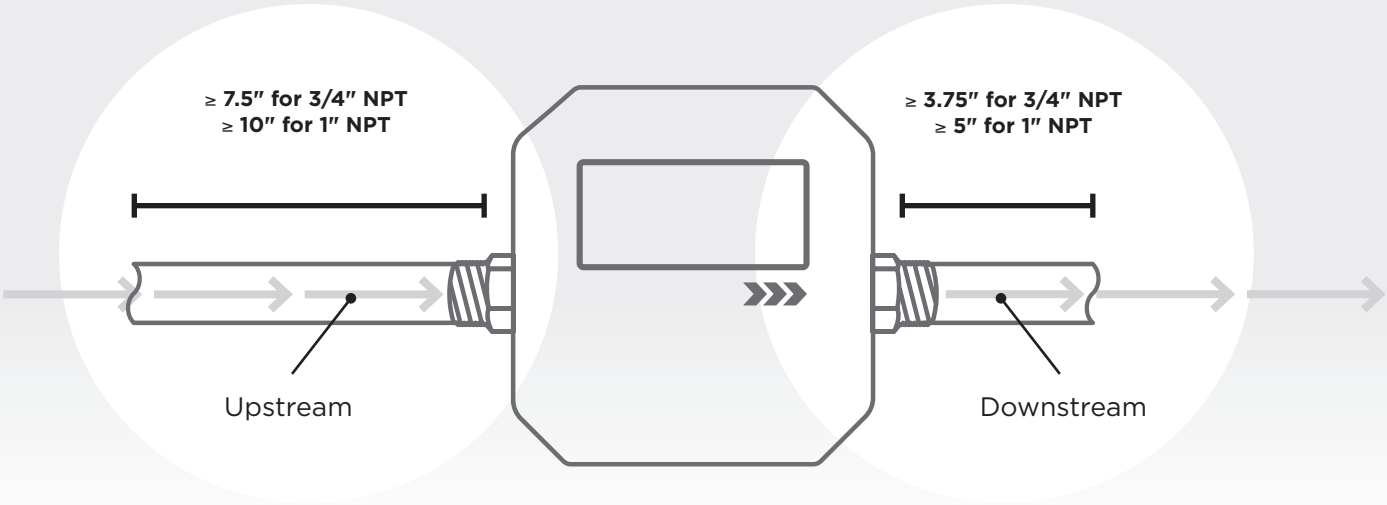
c) Before installation, ensure that any pipe debris, particles, or other foreign materials are completed removed.

d) During installation we recommend installing the *inlet* end of the meter before the *outlet*.

To ensure measurement accuracy, reference diagram on following page.

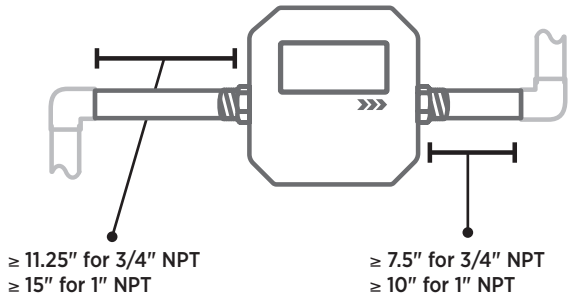
Installation Instructions

Recommended Method

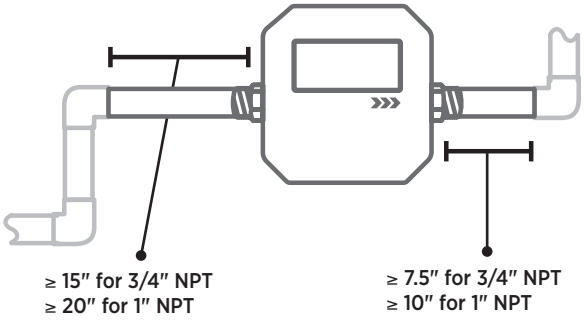


Alternate Methods

2x90° Elbow or T-piece



3x90° Elbows



a) During installation, please make sure no foreign materials (water, oil, dirt, particles, etc.) fall into the pipe.

b) Release all the installation stresses so that no stresses or compressions will be exerted on the product.

c) The product should not be exposed to mechanical shocks to its body or on the pipeline.

d) Slowly open/close valves to prevent abrupt pulse flow impact, damaging the product, the meter should then start to measure the flow in the pipeline.

e) For the product's best performance and safety, it is necessary that the gas to be measured is clean and free of particles or other foreign materials. If unsure, an upstream filter with a proper pore size is recommended to prevent the product from particle contamination. Please consider the actual application requirements for the filter specification, such as pressure loss, gas conditions, etc. Before releasing the gas to pass through the product, check the tubing again to avoid any abnormalities, tighten the tubing fittings, and verify the measurement gas flow direction.

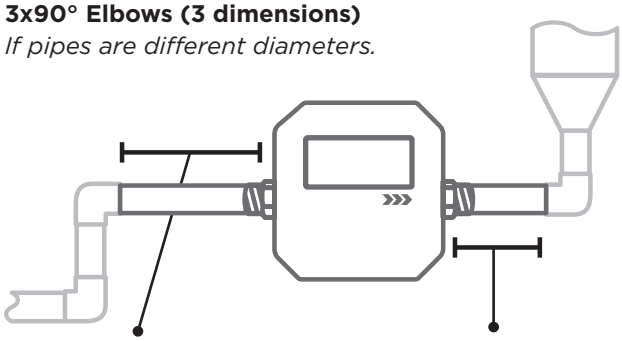
f) Check leakage before any measurement. If needed, pressurized nitrogen or air can be used for leakage check.

Method for Irregular Pipe Sizes

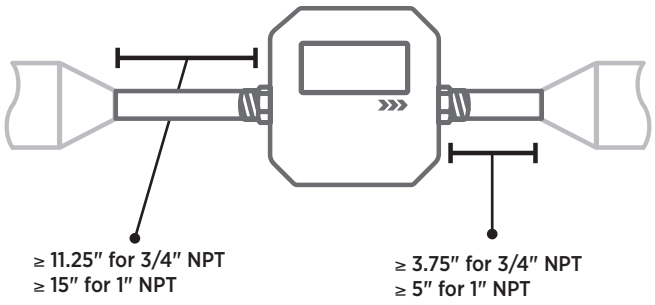
If different pipe sizes are required, diameter of the pipe should be *larger* than those of the meter.

3x90° Elbows (3 dimensions)

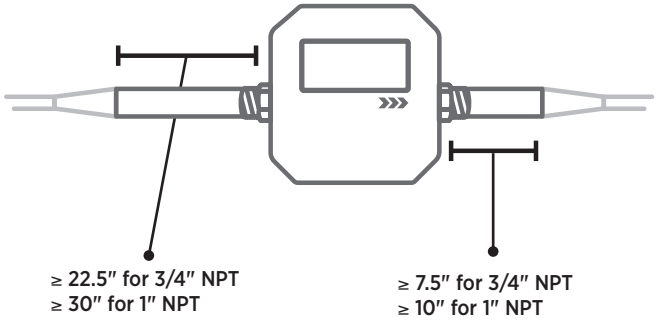
If pipes are different diameters.



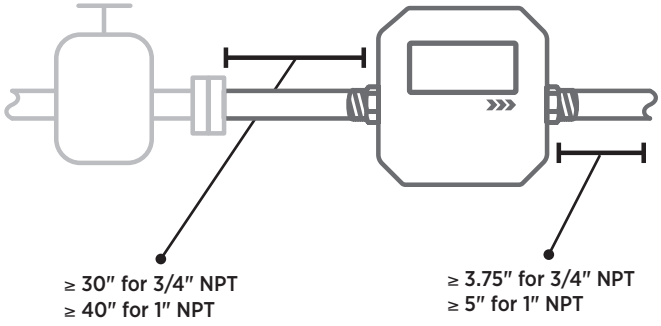
Pipe Diameter Reduction



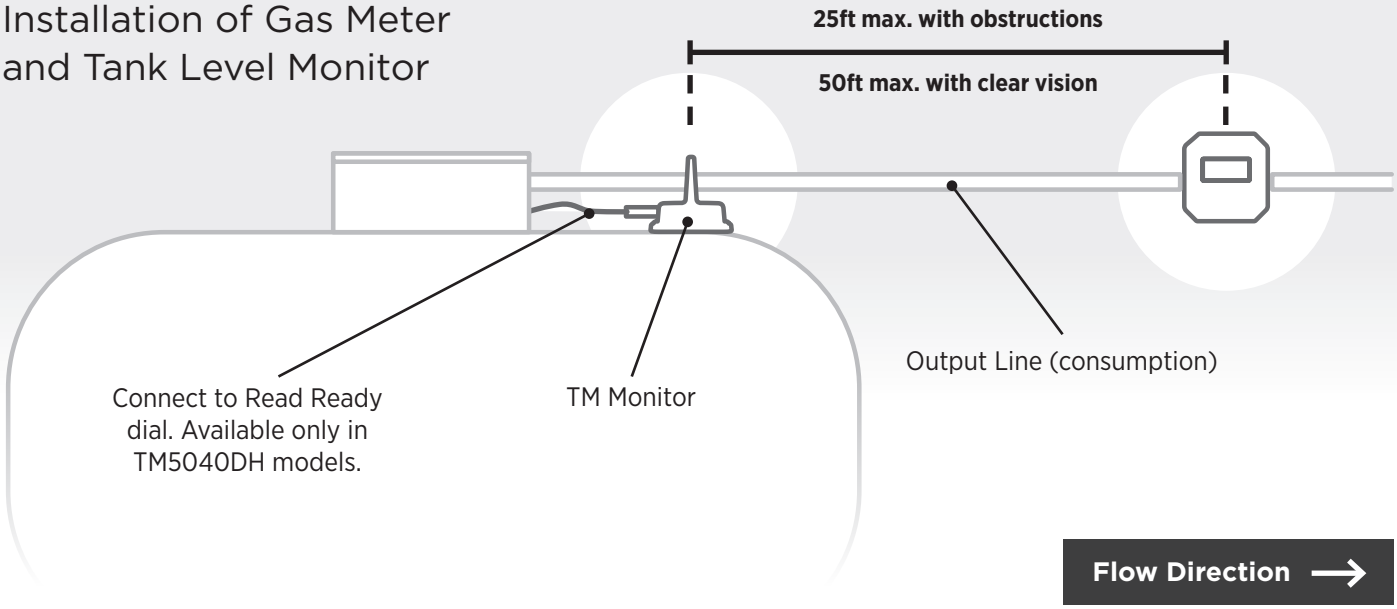
Pipe Diameter Expansion

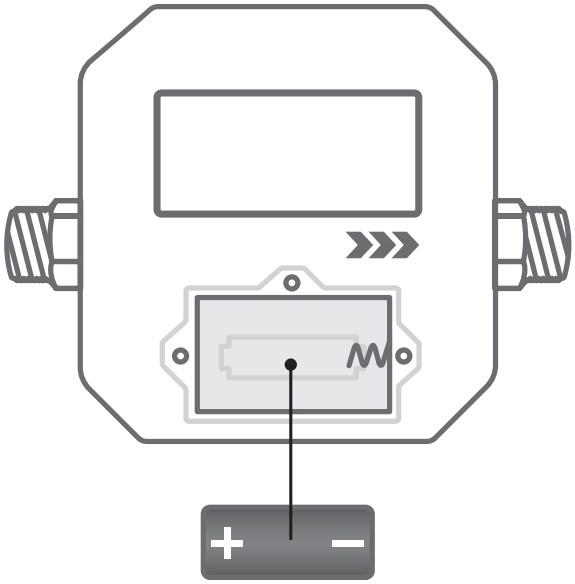


Install with Upstream Control Valve



Installation of Gas Meter and Tank Level Monitor





Battery Replacement

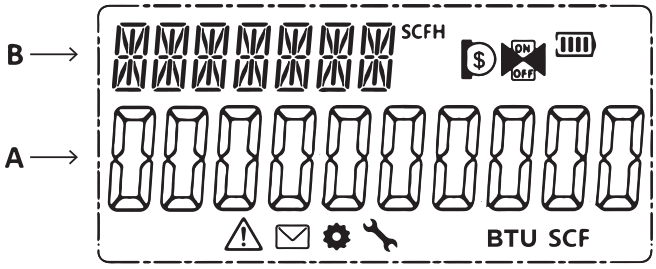
a) Use a Phillips No.2 screw driver to open the front battery chamber cover. Screws are not captive in the device. Ensure you do not let them fall.

b) Install the battery while paying close ATTENTION to the battery's polarity. The *negative* side of the battery must be in contact with the *spring*.

Note: Contact Otodata for approved battery model numbers.

c) Close the chamber cover while paying close ATTENTION to the *gasket* which must be *secure inside its channel.*

d) Re-install the screws and tighten them.



Display

Row A	Displays the totalized flow rate in SCF.
Row B	Displays instant flowrate in SCFH.
	For pre-pay meter or remote charge meter. When balance is due, the symbol will flash (reserved for future product upgrade).
	Valve status (reserved for future product upgrade).
	Battery status.
	Alarm indicator, when any alarms are triggered.
	User information, when the corresponding MENU is entered (reserved for future product upgrade).
	Settings, when the corresponding MENU is entered (reserved for future product upgrade).
	Available tools, when the corresponding MENU is entered (reserved for future product upgrade).
BTU	Coming soon.

Product calibration

The product is calibrated with a high-precision reference sonic nozzle that is traceable to the primary standard traceable to the NIST standard. In normal operation, the product should maintain its status as that at the shipment. However, it is recommended that the product be tested and re-certified according to local, district or state standards.

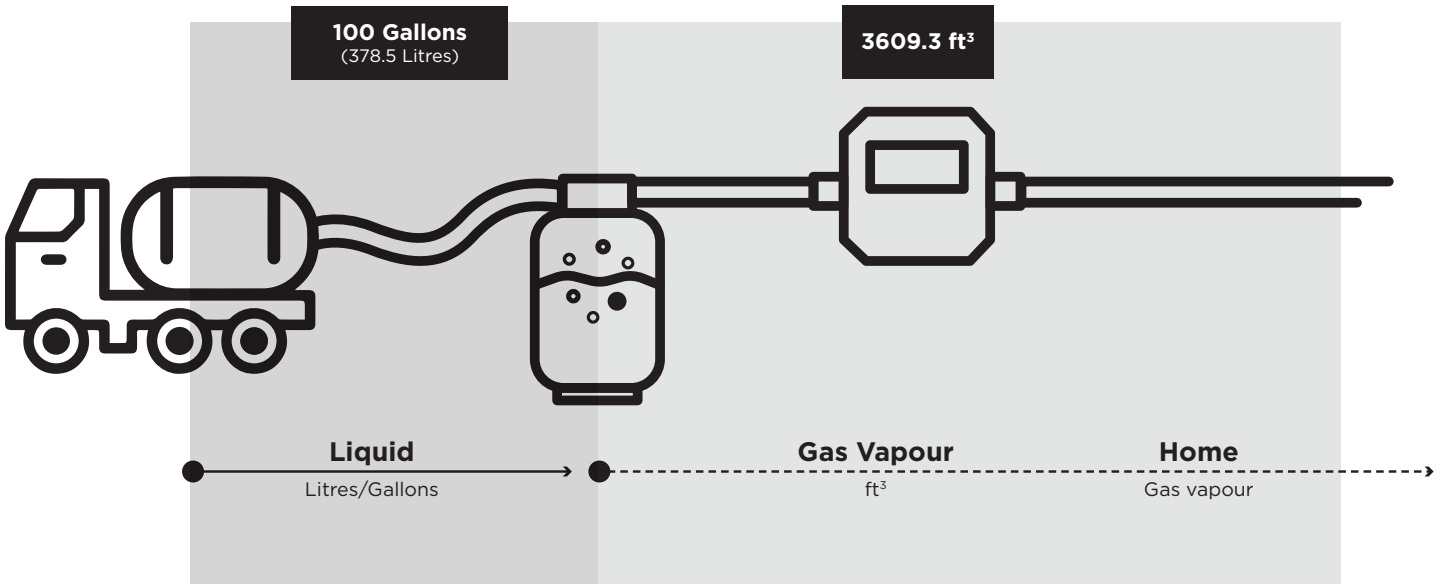
How to Register Your BLE Dial

Please scan the QR code to the left or visit the link below to download Otodata's "How to Pair a Wireless Sensor to a Tank Monitor" guide.

go.otodata.com/gra-0112

Gas Conversion

How to Calculate Liquid to Vapour Conversion



Liquid to Vapour Conversion Example

Gallons (Liquid)	÷	Divide By	=	Cubic Feet (Vapour)
100 G		**0.027706**		**3609.3 ft³**
Litres (Liquid)	÷	Divide By	=	Cubic Feet (Vapour)
100 L		**0.104877**		**953.5 ft³**

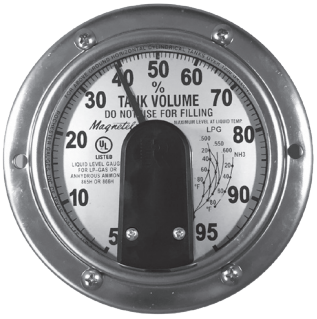
Vapour to Liquid Conversion Example

Cubic Feet (Vapour)	×	Multiply By	=	Gallons (Liquid)
1,000 ft³		**0.027706**		**27.7 G**
Cubic Feet (Vapour)	×	Multiply By	=	Litres (Liquid)
1,000 ft³		**0.104877**		**104.9 L**

1 unit of liquid propane = 270 units of propane vapour.

IMPORTANT

Carefully Read Directions Below Before Installation



HALL EFFECT DIAL UNDER PLASTIC COVER (2 SCREW)

To ensure accurate readings, the Otodata Support team must calibrate monitors for ALL bulk storage dials.

Please contact Otodata upon installation of large dials on bulk propane tanks by phone 1-844-763-3344, email support@otodata.ca, or RFS*.

Please have the monitor serial number and accessory descriptions on hand.

i.e. provide dial range (5%-95% or 3%-97%), dial size (4 inch or 8 inch), and lead type:

- Blank Dial Lead (ACKITGBLK10)
- Right Angle Lead (ACHERA)
- Straight Lead (ACHESL)
- Universal/Digital Lead (ACDH45)

OTODATA

*An RFS (“Request for Service”) can be initiated via the Otodata Portal (neevo.otodata.ca) by right-clicking the serial number of the monitor from the Monitored Assets page, then selecting “Create a request for service”.

Members can watch step-by-step installation videos and shop online

Sign up free today

otodatatankmonitors.com/membership

Members can purchase monitors and accessories like gauges, leads, mounting equipment and more via our online store.

IMPORTANT

Please take a moment to carefully read the installation instructions included with your monitors, and ensure you understand and respect local regulations.

ABOVE-GROUND TANKS

Do not install monitors under lids.

UNDERGROUND TANKS

Plastic lid suggested. Metal lids will obstruct signal.

Reading installation instructions will ensure maximum monitoring performance on all your tanks and installations.