

Manual & Datasheet

CubicMeter
LTCM02-X

Non-invasive water meter & leakage detector



Easy-to-install water and leak monitor. Alerts if **water leaks** are detected. Measures water **volume** & **temperature** to increase awareness. One design for **multiple pipes**. **No plumber** required to install, with an average of **two minutes** to install.

Quandify

TABLE OF CONTENTS

Thanks for choosing the CubicMeter..... 3

INTRODUCTION..... 4

 PACKAGE CONTENTS..... 4

 Model versions..... 4

COMPATIBLE PIPE SETTINGS..... 5

 Plastic pipes version (black)..... 5

 Metal pipes version (white)..... 5

INSTALLATION GUIDE..... 6

FUNCTIONAL WATER FLOW TEST..... 7

ANTI-TAMPERING..... 7

WIRELESS CONNECTION..... 8

DISPLAY..... 9

SPECIFICATIONS..... 10

MAINTENANCE & SERVICE..... 10

INTRODUCTION

PACKAGE CONTENTS

- 1x CubicMeter LTCM02-X
- 2x Small stainless steel pipe clamps
- 2x Large stainless steel pipe clamps
- 2x Tamper-Seal Covers
- 2x Tamper-Seal Stickers
- 1x “Remove to activate” sticker



Pipe Ø15-20 mm



Pipe Ø20-26 mm

Model versions



LTCM02-P
Plastic pipes model

LTCM02-C
Copper pipes model

COMPATIBLE PIPE SETTINGS

CubicMeter offers multiple models, each designed for specific pipe types. Here's a list of compatible pipes for each device version and its LCD name.

Plastic pipes version (black)

LCD code	Compatible pipes	Outer diameters
PAL __	Multi-layered PEX/Aluminum/PEX	16, 20 or 25
PE __	PEX or PE-RT	16, 20 or 25
d 15tP iPE	LK Distance pipe 110 (plastic spacer)	N/A



Plastic version



PEX/Aluminium/PEX



PEX/PE-RT



Distance Pipe

Metal pipes version (white)

LCD code	Compatible pipes	Outer diameters
[u __	Copper	15, 18 and 22
[r __	Chromed copper	15, 18

Metal version



Copper



Chromed copper

INSTALLATION GUIDE

The CubicMeter can be mounted on the property inlet pipe before the pipe is split to various outlets, such as kitchens, showers or bathrooms. It can also be installed after a pipe split for granular measurements.

Before mounting the CubicMeter, please ensure that the pipe is:

- clean
- undamaged
- free from corrosion
- free from paint

If the area on the copper pipe where the CubicMeter will be mounted is corroded or painted, make the pipe surface smooth, by mechanical removal or using solvent, before mounting.

Pipe distance

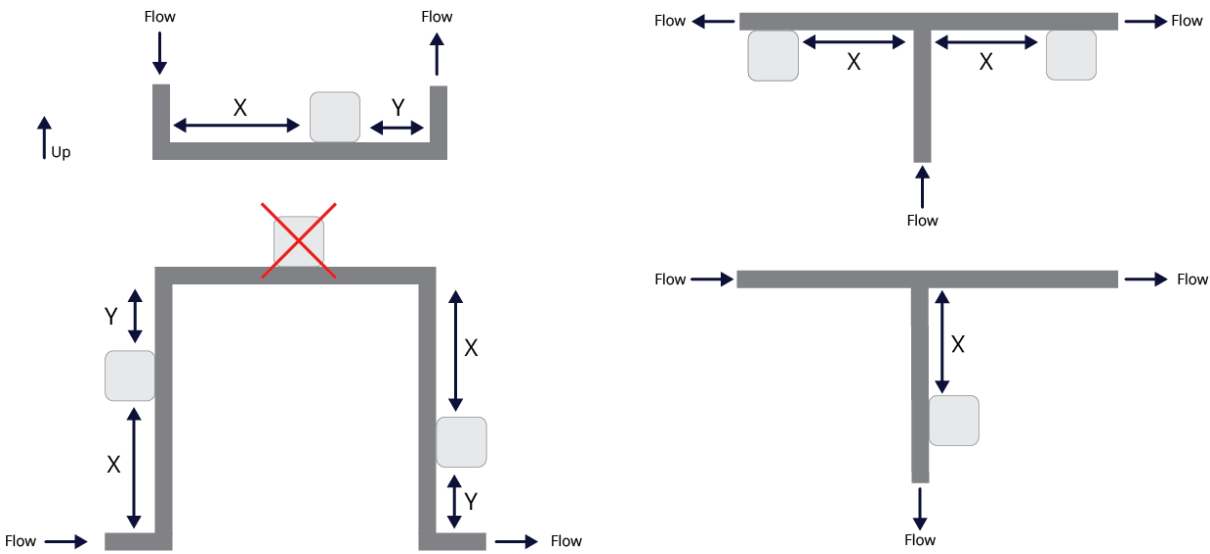
To ensure optimal performance, the CubicMeter should be installed on a minimum distance before and after a pipe bend since it can introduce flow turbulence. Please make sure the following distance constraints are fulfilled:

Upstream distance	X > 10x outer pipe diameter
Downstream distance	Y > 5x outer pipe diameter

Example distances

Pipe type	Copper 15	PAL 20
Outer diameter	15 mm	20 mm
X	> 150 mm	> 200 mm
Y	> 75 mm	> 100 mm

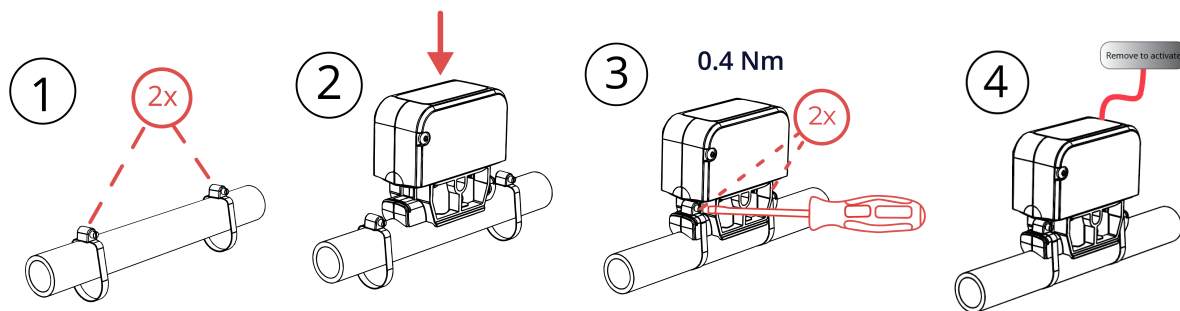
Optimal placements



The device may be rotated vertically around the pipe if needed.

[Watch our video guide for assistance](#)

Mounting



4. Remove the activation sticker. Select pipe setting by holding the sticker over the IR-eye and releasing when on the correct pipe.

(See full pipe list on previous page).

PAL 20

Example of PAL 20mm pipe chosen

5. Verify on the display that the device measures correctly by turning on the water flow for at least 60 seconds.



306 L/h



NO SENSING
0 L/h

If symbol "no sensing" is shown, verify steps 1-4 or try another mounting position/rotation on the pipe.

Note: The device will start saving data automatically after 1 hour in pipe selection mode. If the activation sticker is put back on for 15s over the IR eye within 1 hour, after it has been removed, the device will revert to its packaging state.

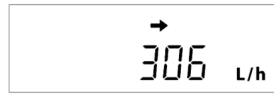
Incorrect installation affects metering accuracy; **do not use plastic zip-ties.**

Remounting

The ultrasonic interface of the CubicMeter will adapt to the geometry of the pipe. If the device is remounted on a different pipe diameter, the performance of the device cannot be guaranteed. This is especially critical when moving the device from a smaller to a bigger pipe diameter.

FUNCTIONAL WATER FLOW TEST

1. When the proper pipe has been selected, open any water tap to get a steady water flow.
2. Check the LCD now shows a flow rate (l/h).



306 liters per hour with correct water flow direction

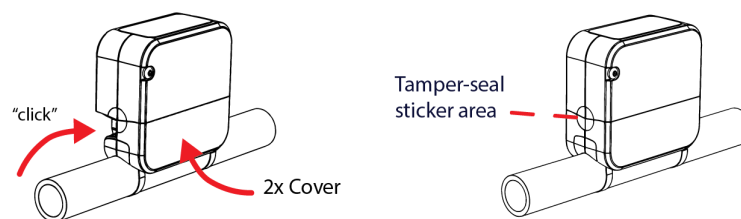
3. Turn off the water by closing the tap and check the flow rate on the LCD that it is now near 0 l/h.

If step 2 or 3 was unsuccessful, please make sure you followed the installation and pipe setup instructions correctly. You can also try to rotate the device around the pipe, in case the pipe has been deformed.

Note that if the meter has been activated for more than 1 hour, it will instead show total water usage in m³.

ANTI-TAMPERING

Attach optional anti-tampering sealing cover and stickers to prevent unauthorized removal of device. Do this only after a verified installation.



WIRELESS CONNECTION

For communication, the device requires LoRaWAN or Wireless M-bus coverage. If there's no existing coverage, you can buy a LoRaWAN gateway compatible with The Things Network (TTN).



CubicMeter uses 868 MHz radio frequency for remote communication via LoRaWAN networks.

To enable LoRaWAN and access remote data through our cloud services:

1. Create an account at Quandify Portal <https://portal.quandify.com>.
2. Register your device(s).

You can also integrate data into your own application using our API <https://quandify.com/api> or extract DEVEUI and keys at <https://quandify.com/keys>.

For setup and monitoring when using LoRaWAN, download the [Quandify app](#).



CubicMeter also communicates via open wireless M-Bus standard at 868 MHz, using mode C1, format A, and security mode 5.

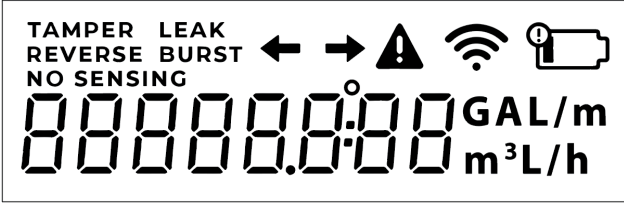
To obtain the individual meter encryption key, sign in and register the meter on our portal:

<https://quandify.com/keys>

For protocol details, visit <https://quandify.com/wmbus-info>.



DISPLAY



LCD CODE	Description
TAMPER	Attempted fraud or tampering with the meter's behavior.
LEAK	Possible medium leakage detected.
BURST	Possible large leakage detected.
REVERSE	Water flows in the wrong direction through the meter.
NO SENSING	Unable to detect water, possibly due to unfilled pipes or loose meter installation. No flow measurement in such cases.
↔	Displays the current water flow direction (left or right).
⚠	Indicates a metering device issue or displays a warning with an error/warning code..
📶 .	Shows that the radio is enabled and active. A single dot denotes a faulty radio module.
🔋	Low battery, less than 180 days remaining.

Units conduct an LCD check every 5 minutes, blanking all segments for 1s, followed by displaying all segments for 1s to verify the screen's functionality.

The following information is then displayed in the following order, 1s per item:

- Firmware version number
- Firmware CRC32 checksum in hexadecimal format
- Current pipe temperature in °C
- Selected pipe setting type
- Event/changelog counter
- If applicable, the last error code logged

SPECIFICATIONS

Battery:	3.6 VDC Li/SOCl ₂ , non-replaceable, up to 10 years
Storage conditions:	5°C ... 55°C
Water temperature:	0.1°C ... 70°C (T70)
Environment:	5°C ... 30°C, indoor usage (B, E1)
Sampling frequency:	1 Hz
Water usage resolution:	1 Liter
Wireless M-bus protocol:	Wireless M-Bus (868MHz, C1, format A)
Wireless LoRaWAN:	EU868MHz (SF 12 for RX2), 1.0.2-revB, OTAA
LoRaWAN data resolution:	1 hour*
Maximum flow rate (Q ₄):	3 125 l/h
Small leak detection:	>1-9 l/h** over several days (Only using Quandify platform)
Medium leak detection:	>10 l/h for at least 40 min
Large leak detection:	>1500 l/h for at least 5 min
Flow rate accuracy:	Copper Pipes: max ±20% error Plastic Pipes: max ±10% error
Flow rate accuracy after on-site calibration:	Down to ±2% error
Ambient temperature accuracy:	Max ±1.5°C error
Water temperature accuracy:	Max ±2°C error
Weight:	280 grams (excluding packaging)
Dimensions:	Width: 40 mm, height: 79 mm, length 87 mm

*You can increase data transmission frequency with various subscriptions, maxing out at once every 15 minutes.

**Depending on pipe size & material

MAINTENANCE & SERVICE

- Maintenance-free for up to 10 years.
- Check the LCD for error codes here:
<https://quandify.com/product-documents/cubicmeter/error-codes.pdf>
- For faults, contact your authorized distributor. Only authorized Quandify centers handle service and battery replacement.
- Authorized personnel can configure settings via the meter's optical eye or LoRaWAN.
- Use original manufacturer spare parts for external replacements; authorized personnel perform replacements.
- To uninstall a meter, remove tamper-seal covers with a screwdriver and cut metal fastening clamps with pliers.

For more information or support, go to <https://quandify.com/support>.



Copyright © Quandify AB 2017-2023
All rights reserved