

# Thermal Energy Meter



## Technical Documentation

Edition 2021-02.A



# Table of Contents

	<u>Page</u>
General Information	3
Nomenclature	5
NFC Connection requirements	6
Installation Notes	7
Supply Voltage	9
Operating controls and Indicators	9
Wiring	10
Configuration using Belimo Assistant App	13
Configuration Using Webview	15
Exchanging the Sensor Module	25

# General Information

## General information

<b>Use and function</b>	The thermal energy meter records the thermal energy in closed heating systems, cooling systems or heating/cooling systems.
<b>Scope of delivery</b>	<ul style="list-style-type: none"> <li>- Thermal energy meter</li> <li>- NPT adapters</li> <li>- Silicone grommet</li> <li>- Installation instructions</li> </ul>
<b>Requirements for the water quality</b>	The measuring stability of the counters is only given if the water quality meets the conditions of AGFW recommendation FW-510 and VDI 2035.
<b>Energy meter installation</b>	Before commissioning and installing the thermal energy meter, the operating manual should be carefully studied to prevent errors during installation and commissioning.
<b>Overview</b>	Thermal energy meter providing precise fluid and energy measurement in a heating or cooling system. Equipped with automatic temperature and glycol compensation that ensures reliable measurement. Optional PoE (Power over Ethernet) simplifies installation. Seamless integration via BACnet, Modbus and MP-BUS. Parameters can be easily set using NFC or web server. Connection to Belimo Cloud supports remote IoT metering and billing.
<b>Features and Benefits</b>	<p><b>IoT Capability</b> – Allows for remote meter reading and provides data that could be utilized for billing.</p> <p><b>Power over Ethernet</b> – (PoE) Simplifies installation reducing the need for additional transformers and wiring. Single Ethernet cable can be utilized for both data and supplying power to the meter.</p> <p><b>Glycol Monitoring</b> - A feature exclusive to the Belimo meter that provides the ability to determine glycol concentration.</p> <p><b>Factory Wet Calibrated</b> - Multi-point wet calibrated to ensure accuracy and repeatability.</p> <p><b>Patented temperature and glycol compensation</b> – built in logic that eliminates manual calibration.</p> <p><b>High Accuracy</b> – <math>\pm 2\%</math> accuracy of reading and <math>\pm 0.5\%</math> repeatability ensure accurate and precise flow measurement.</p> <p><b>Energy Meter</b> - Thermal heat transfer energy data is transparent allowing users the ability to see and document system performance during commissioning and over time.</p> <p><b>Live Data</b> - Data including flow, thermal power, supply and return temperature and delta t can be viewed live or shared with the DDC system. Commissioning, troubleshooting, and integration to DDC systems is fast and reliable.</p>

# General Information

## General information

### Integrated Web Server

On board user interface visualizes flow and energy data as well as provides key performance indicators in a graphical user interface to simplify use and operation.

### Features and Benefits

**Data History** - Live data as well as many other performance parameters are stored for up to 13 months in the meter. This data allows operators to benchmark and better understand system performance.

**Field Configuration** – Belimo Assistant App or integrated webserver allows users to make field adjustments. Additional system integration and with Analog feedback, as well as Modbus RTU and Modbus TCP BACnet MSTP and BACnet IP providing users with a wide range of options for integration.

**Commissioning Report** - Provides a report of the meter settings for historical records and operational confirmation.

**Health Status and on board troubleshooting** – The meter monitors health status to insure accurate operation and provides onboard troubleshooting to correct any errors.

**Save and reload setting** - easily save settings from one meter configuration and load in another allowing for fast and accurate integration.

**Additional Sensor input** – An analog input is available providing an active sensor, passive sensor, temperature sensor or switch to integrate data elements of additional processes and control possibilities.

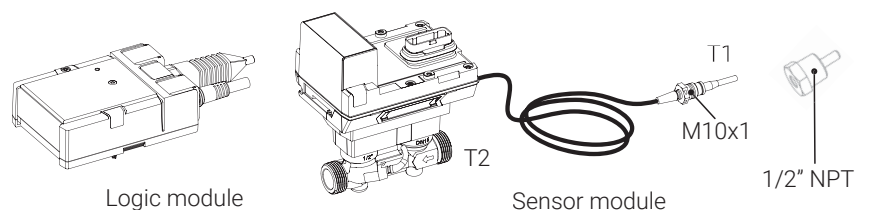
**5-Year Warranty** – Belimo Quality provides reliability and piece of mind.

### The operating instructions are valid for the following thermal energy meters

Product type from Belimo	DN	Inches	GPM
22PE-5UC	15	½	6.6
22PE-5UD	20	¾	11
22PE-5UE	25	1	15.4
22PE-5UF	32	1¼	26.4
22PE-5UG	40	1½	44
22PE-5UH	50	2	66
22PE-5UHH	50	2	100

### Structure of the thermal energy meter

The thermal energy meter consists of a sensor module with connected temperature sensors, which houses the calculator unit and measuring system, and the logic module, which connects the thermal energy meter to the power supply and provides the bus and NFC communication interface.



# Thermal Energy Meter

## Thermal Energy Meter Nomenclature

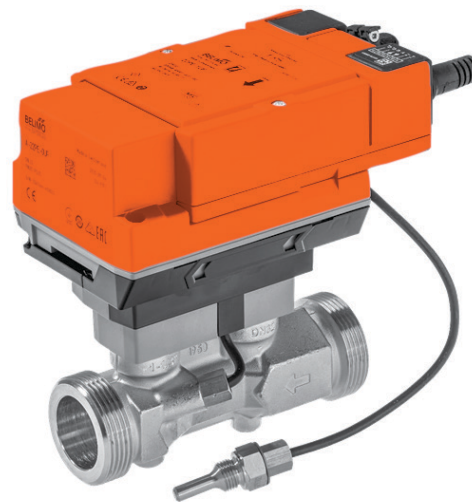
### BTU Measurement

22	P	E	-	5	U	C
<b>Power</b> 22 = Active	<b>Application</b> P = Pipe	<b>Energy</b> E = Water		<b>Region</b> 5 = Americas	<b>Signal Type</b> U = Modbus, BACnet, MP-Bus	<b>Size</b> C = ½" D = ¾" E = 1" F = 1¼" G = 1½" H = 2", 66 GPM HH = 2", 100 GPM

Thermal Energy Meters provide precise measurement of BTU's utilizing ultrasonic technology with glycol and temperature compensation for HVAC and sub metering applications.

Power Supply	AC/DC 24 V power over ethernet PoE; DC 37...57 V IEEE 802.3af / at Type 1, Class 3 11 W (PD13W)
Cable Connection	cable connection with 3ft [1m] 18 Ga appliance cable
Degree of Protection	NEMA 2, IP54 or NEMA 4X
Fluid	chilled or hot water up to 60% glycol max, condenser water open loop/steam not allowed
End Fitting	NPT female inlet, NPT female outlet
Sensor Housing	forged brass, nickel plated
Sensor Housing Pressure Rating	360 psi
Fluid Temp. Range	-4...+250°F [-5...+120°C]
Ambient Temp. Range	-22...+130°F [-22...+55°C]
Inlet Length to Meet Specified Measurement Accuracy	5x nominal pipe size (NPS)
Flow Sensor Technology	ultrasonic with glycol and temperature compensation
Flow Measurement Tolerance	±2%*
Flow Measurement Repeatability	±0.5%
Agency Listing	cULus:UL 94 D5 E108966, UL Enclosure Type 2
Standards	meets the accuracy requirements of EN1434
Temperature Sensors	PT1000 - EN60751, 2 conductor technology, inseparably connected Cable length external sensor T1: 3 ft. [3m]

\*See technical documentation



Thermal Energy Meter



## NFC Connection



The NFC logo on the thermal energy meter indicates that the device can be operated with the Belimo Assistant App.

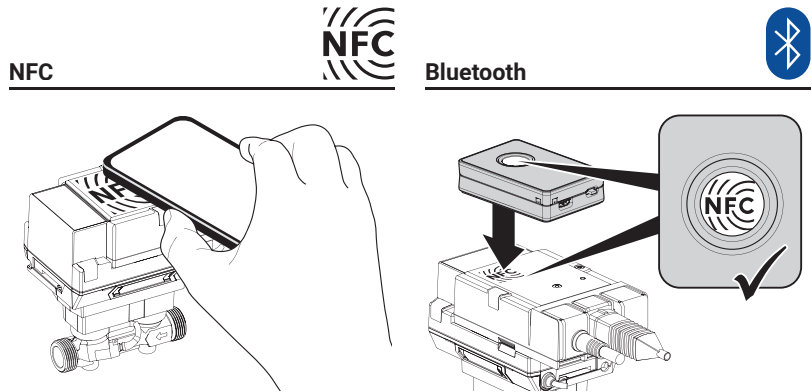
Requirement:

- NFC or Bluetooth-enabled smartphone
- Belimo Assistant App (Google Play and Apple App Store)

**NFC:** Position the NFC-enabled smartphone on the thermal energy meter so that both NFC antennas of the smartphone and thermal energy meter are on top of each other.

**Bluetooth:** Connect the Bluetooth-enabled smartphone to the thermal energy meter via "Bluetooth NFC converter" ZIP-BT-NFC.

Technical data and operating instructions can be found on the ZIP-BT-NFC data sheet.



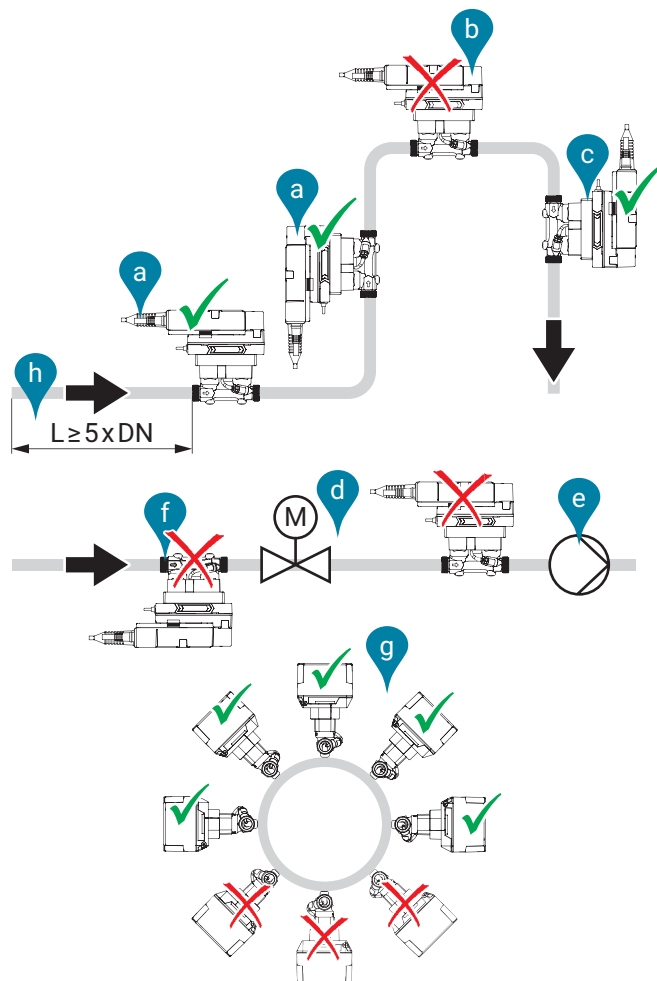
## Installation Notes

### Installation position

- a) Recommended installation position
- b) Prohibited installation position due to the risk of air accumulation
- c) Acceptable installation position in closed systems
- d) Installation directly downstream from valves is prohibited.  
Exception: if it is a isolation valve without constriction and is 100% open.
- e) Installation on the suction side of a pump is prohibited.
- f) The thermal energy meter must not be installed upside down.
- g) Upright to horizontal installation is permitted, but suspended installation is prohibited
- h) In order to achieve the specified measuring accuracy, it is recommended to provide a straight flow-calming section or inflow section in the direction of flow upstream from the thermal energy meter. This must be at least 5 x DN and have the same nominal size (DN) as the thermal energy meter.

### Inlet section

IN [DN]	L min.
½ [15]	5 x ½" = 2½" [64 mm]
¾ [20]	5 x ¾" = 3¾" [95 mm]
1 [25]	5 x 1" = 5" [127 mm]
1¼ [32]	5 x 1¼" = 6¼" [159 mm]
1½ [40]	5 x 1½" = 7½" [191 mm]
2 [50]	5 x 2" = 10" [254 mm]

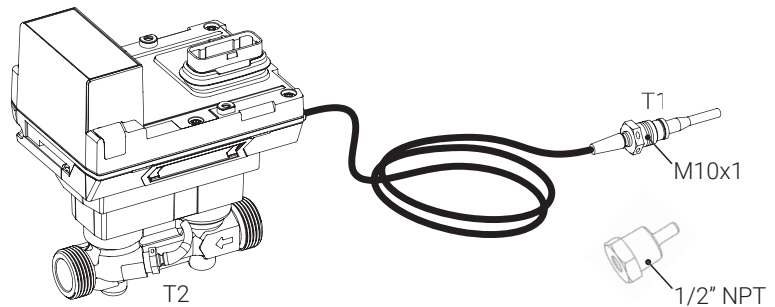


**Flow direction**

The direction of flow indicated by an arrow on the logic module and flow measuring pipe must be complied with, otherwise the flow will be measured incorrectly.

**Installation of temperature sensor T1**

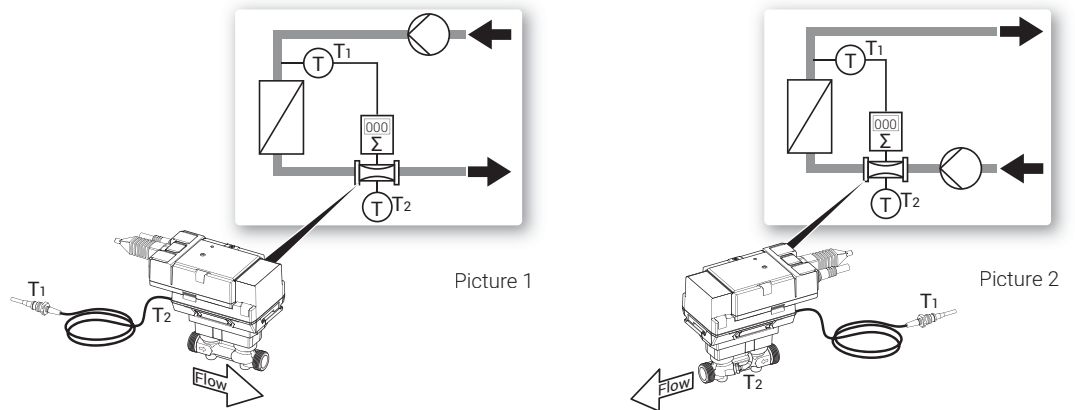
The connecting cable of temperature sensor T1 should not be laid along hot pipes or wound around them, as the wire resistance and its temperature dependency affect the measurement result of temperature sensors in two-wire technology.



**Installation in the return (default)**

Picture 1 displays the thermal energy meter is in the return of the heat exchanger. Temperature sensor T2 installed directly in the sensor module records the return temperature. The external temperature sensor T1 is installed in the temperature measurement a thermo well on the the supply side

Picture 2 displays the thermal energy meter is in the supply of the heat exchanger. Temperature sensor T2 installed directly in the sensor module records the return temperature. The external temperature sensor T1 is installed in the temperature measurement a thermo well on the the return side



**Assignment and configuration**

The Belimo Assistant App must be used to inform the thermal energy meter that it is located in the return or supply.



# Supply voltage

## Supply with AC/DC 24 V

The supply voltage of the thermal energy meter is 24 Volt AC or DC.

## Supply via PoE

Alternatively, supply can be supplied via the Ethernet socket using PoE (Power over Ethernet with standard IEEE 802.3af). Activation of the PoE supply DC 24 V for supplying the external active sensor (see also the chapter «Wiring diagrams») is carried out via the Belimo Assistant App (regardless of whether communication takes place via Ethernet). If the thermal energy meter is supplied with voltage via PoE, DC 24 V (max. 8W) is available at wires 1 + 2 for supplying external devices (e.g. actuator or active sensor).

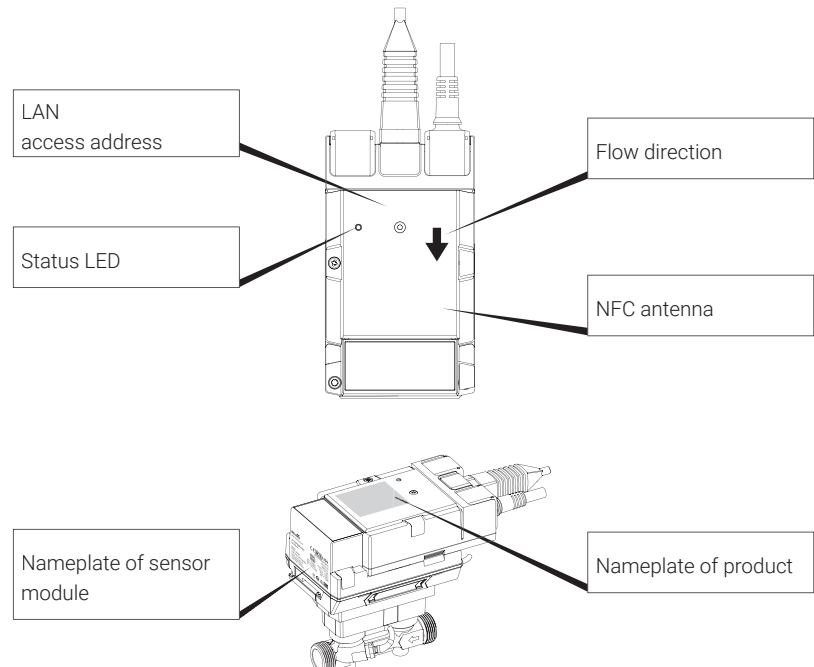


**Caution:** PoE may only be enabled if an external device is connected to wires 1 + 2 or if wires 1 + 2 are insulated!

# Operating controls and indicators

## Status LED display

LED	Status	Action
Lights up continuously	Everything ok	
Flashing	Action required	Use smart-phone app
Off	No voltage	



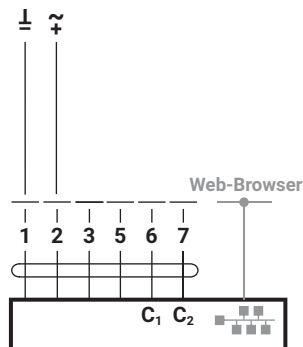
# Wiring diagrams

## Notes

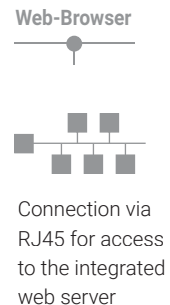


- The wiring of the line for BACnet MS/TP and Modbus RTU must be carried out according to the relevant RS485 guidelines.
- Modbus/BACnet: Power supply and communication are not galvanically separated. Connect earth signal for devices with one another.
- Sensor interface: A sensor can optionally be connected to the thermal energy meter. This can be a passive resistance sensor (Pt1000, Ni1000 or NTC), an active sensor (e.g. with a DC 0...10 V output) or a switching contact. As a result, the analogue signal of the sensor can be easily digitised with the thermal energy meter and transferred to the corresponding bus system.
- Analogue output: an analogue output is available at the thermal energy meter. This can be selected as DC 0...10 V, DC 0.5...10 V or DC 2...10 V. For example, the flow or the temperature of temperature sensor T1/T2 can be output as an analogue value.
- IP protection: IP protection is only guaranteed if either the Ethernet connector socket is protected with the cover cap or a connected Ethernet cable is protected with the enclosed silicone sleeve.
- Equipotential bonding: equipotential bonding must be installed on the flow body, if this is not already done via the pipeline.

## Connection assignment

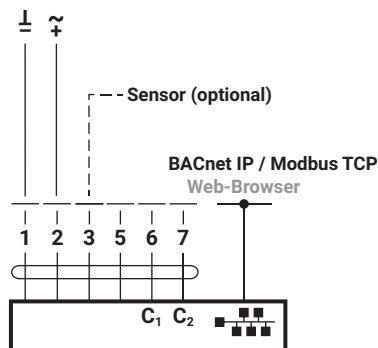


- Wire colours:**
- 1 = black, GND
  - 2 = red, AC/DC 24 V
  - 3 = white, sensor
  - 5 = orange, MP, DC 0...10 V
  - 6 = pink, C1 = D- = A
  - 7 = grey, C2 = D+ = B

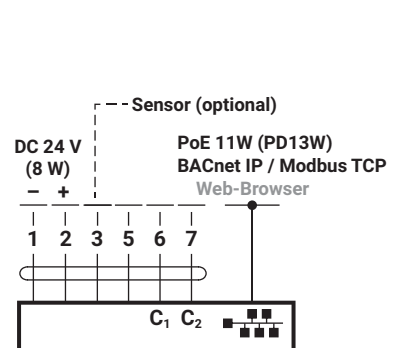


## Connections BACnet, Modbus, MP-Bus

### BACnet IP or Modbus TCP

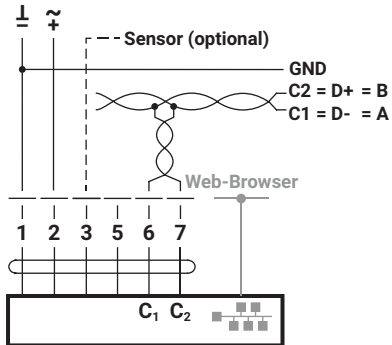


### PoE with BACnet IP or Modbus TCP

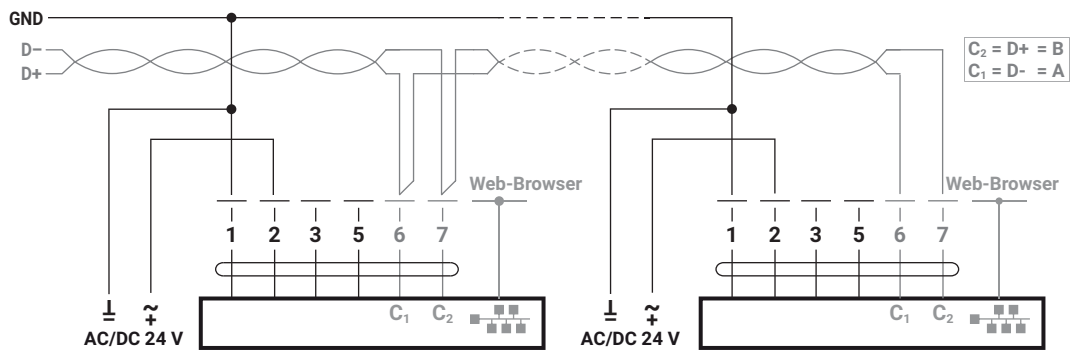


# Wiring diagrams

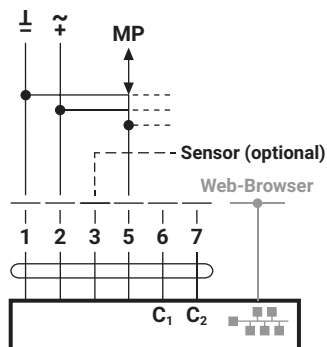
## BACnet MS/TP or Modbus RTU



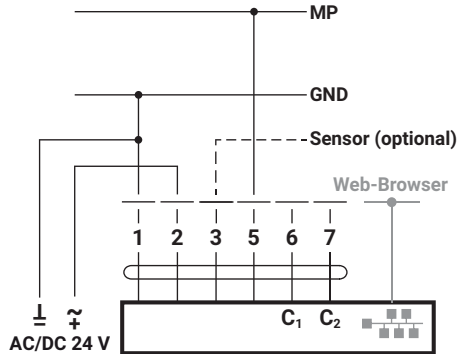
## Wiring BACnet MS/TP or Modbus RTU (daisy chain)



## MP-Bus, supply via 3-wire



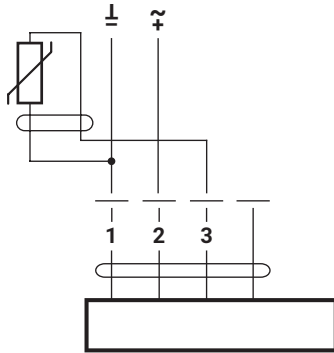
## MP-Bus via 2-wire local power supply



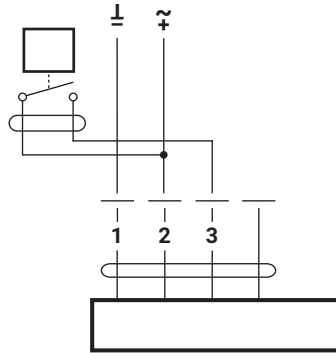
# Wiring Diagrams

## Sensor connections

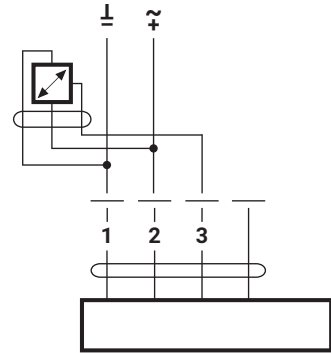
Passive sensor connection



Switch connection

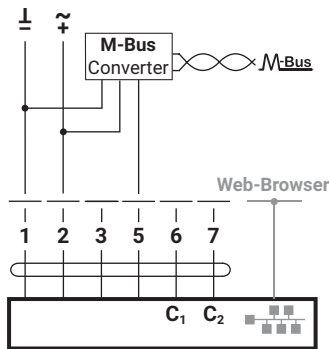


Connection active sensor

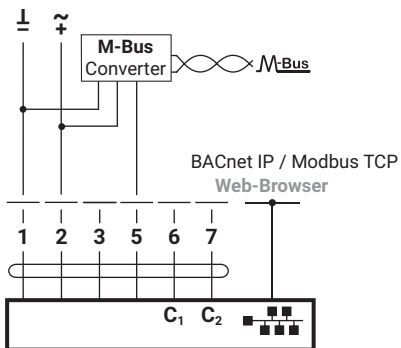


## Connections to M-Bus

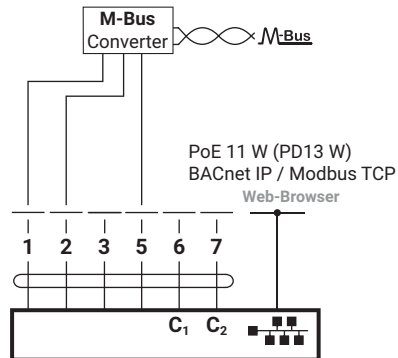
M-Bus via M-Bus converter



M-Bus with converter in parallel operation with BACnet IP or Modbus TCP



M-Bus with converter in parallel operation with PoE BACnet IP or Modbus TCP



# Configuration of the thermal energy meter using Belimo Assistant App

## Notes on activation



The Thermal Energy Meter can be configured locally two different ways. It can be accomplished either using a smart phone with the Belimo assistant app or using the local web interface via `belimo.local:8080`

### Important:

- Activation should be done carefully. In case of incorrect activation, the device will measure incorrectly.
- Whoever carries out commissioning is obliged to check all relevant parameters.

The following chapter describes how to activate the thermal energy meter using the Belimo Assistant App.

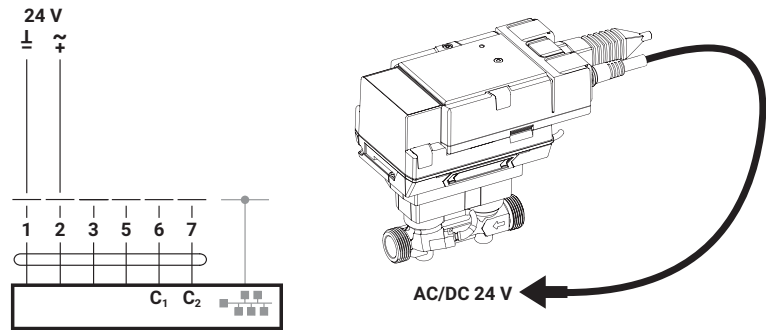
## Notes on smartphones with Bluetooth

Bluetooth-enabled smartphones can be connected to the thermal energy meter via "Bluetooth-NFC converter" ZIP-BT-NFC (see chapter "NFC connection" in the "General notes").

## Procedure for configuration

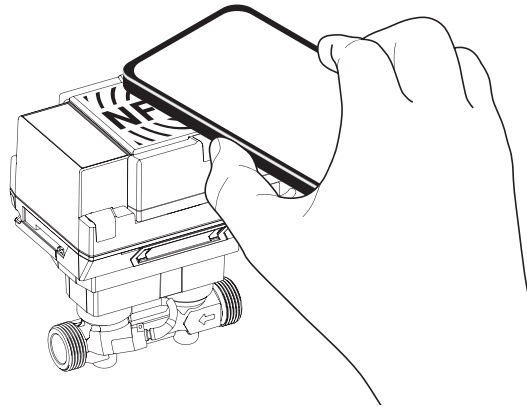
### Step 1.

Connect the thermal energy meter to AC or DC 24 Volt or PoE (Power over Ethernet).



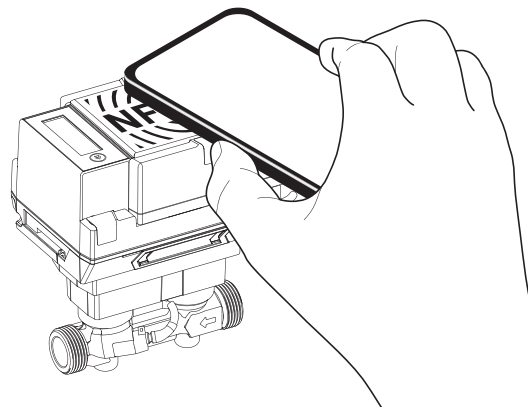
### Step 2.

Scan the thermal energy meter via NFC. The configuration process can now be started via the overview page.



### Commissioning protocol

To prevent installation errors, it is recommended to have an installation and commissioning certificate issued when the thermal energy meter is reassembled or replaced. Documenting all measuring point data, counter data, the installation situation and the operating states ensures that the correct installation and the function of the thermal energy meter is reliably verified.



# Configuring the thermal energy meter using webview

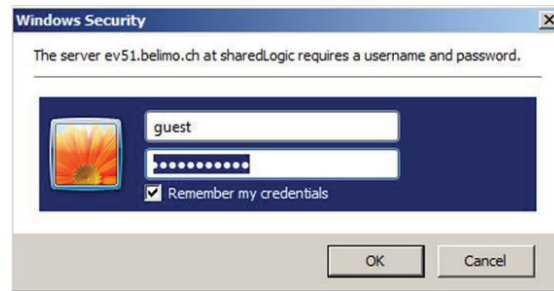
The thermal energy meter is equipped with an on board web interface to allow configuration. To configure the thermal energy meter using webview it must be connected to a TCP/IP network. If connecting the thermal energy meter to a laptop computer directly using a dynamic peer to peer connection without connecting to a LAN, no laptop IP configuration is required, open a web browser and type in the following address in the web browser address bar: `http://169.254.1.1`

If connecting the thermal energy meter to a laptop computer directly using a static connection without connecting to a LAN, configure the laptop IP address to `192.168.0.200` before connecting to the thermal energy meter. Then open a web browser and type in the following address in the web browser address bar: `http://192.168.0.10:8080`

- Access to the actuator is protected by the user name and password.
- Three default user types are available to login.
- Each user type has different security rights to the Web View. Refer to Web View user table below.
- Belimo cannot recover IP address. IP address can be viewed with ZTH US tool.

## Login

- Access to the meter is protected by the user name and password.
- Three default user types are available to login.
- Each user type has different security rights to the Web View. Refer to Web View user table below.
- Belimo cannot recover IP address.



## Web View User Table

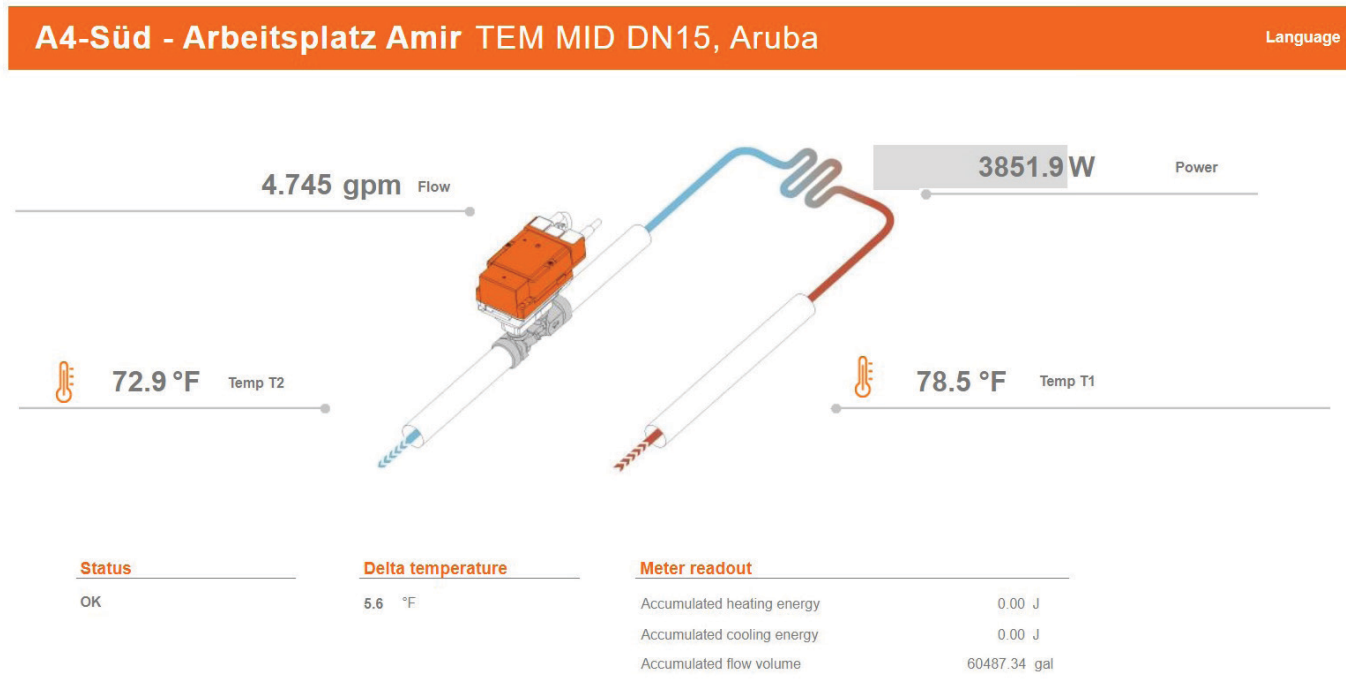
Username:	guest	maintenance	admin
Password*:	guest	belimo	Contact Belimo Tech Support
Web View Page			
Dashboard	Read	Read	Read
Overview	Read	Read/Write	Read/Write
Data Log Chart	Read	Read	Read/Write
Settings	Read	Read	Read/Write
Status	Read	Read/Write	Read/Write
Date & Time Settings	--	Read/Write	Read/Write
IP Settings	--	Read/Write	Read/Write
Version Information	--	Read/Write	Read/Write
Data Logging	Read	Read	Read/Write
BACnet / MP Settings	Read	Read	Read/Write

\*Password is case sensitive

## Overview

The overview page allows you to see the flow, power, temperatures, glycol percentage, status and double click on a heading item to see a historical trend of the data.

The Energy Valve Web View is a graphical user interface accessed via a network or internet to set up, and change the parameters of the thermal energy meter. The Web View consists of the following page views:

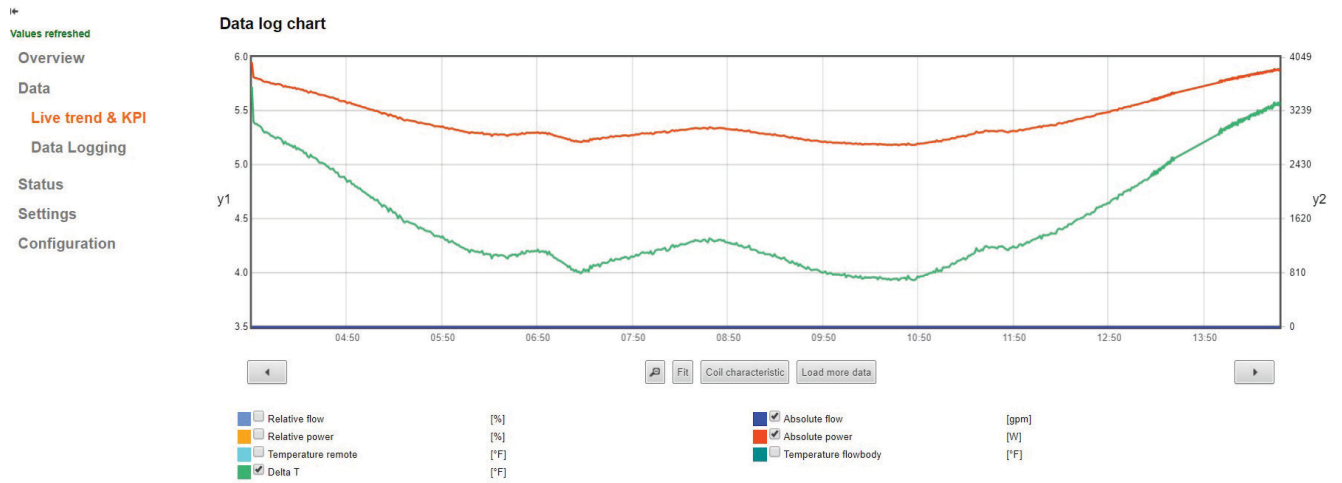




## Data

### Live Trend and KPI

An analytical view of the real time and historical data with the ability to select the type of data to analyze; primarily used for energy optimization and troubleshooting. Key performance indicators provide quick view of the meters operation along with totals of flow and energy.



### KPI - Statistics & counters

March ▼ i

**Flow** i

Max	0.000 gpm
Min	0.000 gpm
Average	0.000 gpm

**Power** i

Max	0.0 W
Min	0.0 W
Average	0.0 W

**Delta temperature** i

Max	0.0 °F
Min	0.0 °F
Average	0.0 °F

**Cooling Energy** i

0 J

**Heating Energy** i

0 J

**Flow Total** i

0 gal

## Data Logging

Location to download all the historical data in a spreadsheet the format is (.csv)



### A4-Süd - Arbeitsplatz Amir TEM MID DN15, Aruba

- Overview
- Data
  - Live trend & KPI
  - Data Logging**
- Status
- Settings
- Configuration

**Filetype**

Short Term Storage (31 days uncompressed)  
 Long Term Storage (13 month compressed)

**Filename**

Below are the setting that can be configured via the web browser.

## Settings

① **Thermal Energy Meter**      1/2" | DN 15  
 qp      <NominalWater gpm

**Startup Assistant**      **Commissioning Report**

② **Settings Import**      **Settings Export**

### Configuration

③ **Units**

Temperature	°F	▼
Flow	gpm	▼
Power	W	▼
Energy	J	▼

⑤ **Additional Sensor Settings**

Additional sensor input mode	Passive	▼
Additional temperature sensor	None	▼

④ **Application**

Installation position	Valve in return pipe	▼
Media	1.2-Polypropylen	▼

⑥ **Analog feedback**

Feedback	Flow	▼
Range	2 - 10 V	▼
Maximum	5.548 gpm	
Range      1.664 - 5.548		

## Web View Settings

TAB	SETTING	FUNCTION	DEFAULT / RANGE
1. General Information	Meter Size	Defines the design flow cataloged capacity	N/A
2. Functions	Set Up Assistant	A set up routine that runs on first power up to assist the installer with configuring the meter. Can also be run again by selecting here and any changes made will be applied.	1/2...2" [DN15...DN50]
	Import/ Export	Allows the export of meter settings & Import into another meter in XML Format.	N/A
	Comissioning Report	Generates a PDF of meter configuration settings for records.	N/A
3. Units	Temperature	Units: water supply, return, and delta T.	Fahrenheit Celsius, Kelvin
	Flow	Units: water flow rate through the meter.	GPM M3/s, M3/h, l/s, l/min, l/h
	Power	Units: thermal power through the meter.	kBTU/h W, kW, BTU/h, Ton
	Energy		kBTU J, kJ, kWh, MWh, Wh, kBTU, Ton H, MJ, GJ
4. Application	Installation Position	Identify the installed fluid service location of the meter	Meter in Return Pipe Meter in Supply Pipe
	Media	Water or water/glycol composition used to accurately calculate: flow, thermal power and energy.	Water Monoethylene Glycol Polyethylene Glycol
5. Additional Sensor Settings	Additional Sensor Input Mode	The Meter has the capability to add an additional sensor input to collect system data via wire	Range Active, Passive Switch
	Additional Temperture Sensor	Allows the selection of additional temperature sensor	None, PT1000, Ni1000EU, NTC10k2, NTC10k3
6. Analog Feedback	Feedback	Function the analog feedback on feedback wire	Relative Flow, Relative Power, Supply Temperature, Return Temperature, Differential Temperature
	Range	The analog feedback	0...10V, 0.5...10V, 2...10V
	Maximum	The maximum flow of meter	N/A

# Configuration Options

## Date and Time Settings

Provides different ways to set the date and time. It allows the time to be entered manually, synchronized through a computer, or synchronized with a Time Server. If BACnet communication is enabled, Local Client Date and Time will be automated through BACnet.

**Local Client**

11:36:31 Time

07.02.2017 Date

GMT-5 Timezone

**Remote Node**

17:35:38 Time

07.02.2017 Date

CET Timezone

Synchronize Time

**NTP Server (optional)**

Local RTC

Time Server

IP Address Timeserver

Submit

## IP Settings

To configure the valve communication on a TCP/IP network. It allows the valve to have a dynamic IP address (requires an active DHCP server) or a static IP address (requires an IP address, Network Mask and Gateway address from IT manager). The Broadcast address will be generated automatically.

The DNS Servers are listed here for default. If different are preferred they will need to be assigned by the customer IT infrastructure responsible for the Energy Valve installation.

**Network configuration**

50:2D:F4:07:B8:B5 MAC address

DHCP/Zeroconf

Static/Zeroconf

192.168.0.10 IP address

255.255.255.0 Network mask

192.168.0.1 Gateway

208.67.220.220 DNS nameserver 1

8.8.8.8 DNS nameserver 2

192.168.0.255 Broadcast address

169.254.1.1 ZeroConf Address

Change IP configuration

## Version Information

Displays current software version.

**Hardware**

21701-20005-022-009 Serial Number

13185-00004 OC Module Material Number

**Software**

0.3.3G20 Operating System Version

2.15.0 Core Software Version

1.12.4 Communication Module Firmware Version

**Application Model**

ev-app-3-09-324 Model Name

ev-app-3-09-324-021500.bcz Model File Name

3.0.324 Model version

# Configuration Options

## BACnet, MP-Slave and Modbus Settings

This page is used to set the type of communication and settings for the Energy Valve. All BACnet configurations must be set prior to connecting to the BACnet network to avoid communication and settings problems

**BACnet, MP-Slave and Modbus Settings**

**Communication Protocol**

- BACnet IP
- BACnet MS/TP
- MP
- Modbus TCP
- Modbus RTU
- None

- BACnet is a building automation communication protocol worldwide standard.
- MP is a Belimo protocol that allows for communication to multiple Belimo devices at the same time.
- Modbus is also a building automation communication protocol
- None is the default value, when selected the valve will not communicate via BACnet.

## BACnet IP Settings

**Port:** UDP port value defaulted to 47808

**Simple/Foreign Device:** A Simple Device requires communication only on its own IP subnet, or there is a BBMD device on its subnet to handle routing of broadcast messages between subnets. A Foreign Device communicates to devices on subnets other than its own and to do so, must register with a BBMD device on a remote subnet.

**Instance ID:** A unique ID number for the EV device object on the BACnet network (between 0 and 4194303). This is \*not\* a read only value.

**Device Name:** Name used to represent the device in the BACnet system.

**Device Description:** General detail of the device.

**System Status:** Indicates that the valve is operational. A read only value. 0 is operational, 1 is not operational.

**Protocol Version and Revision:** These are read only values to show the BACnet protocol version and revision that the communication software follows.

**IP BBMD:** IP address entered must be the address of the BBMD router on a different subnet.

**Time to Live:** The time in seconds between updated registrations with the BBMD router. If your BBMD router has a TTL setting, this value should match the router's.

**Communication Protocol**

- BACnet IP
- BACnet MS/TP
- MP
- Modbus TCP
- Modbus RTU
- None

**BACnet IP Settings**

Port

- Simple Device
- Foreign Device

**Device Object Settings**

Instance ID

Device Name

Device Description

System Status

Protocol Version

Protocol Revision

- Simple Device
- Foreign Device

IP BBMD

Time-to-Live



# Configuration Options

## BACnet MS/TP Settings

**Baud Rate:** The transmission speed within the MS/TP network. All devices on the same network must be set to the same baud rate. Available rates: 9600, 19200, 38400, 76800, 115200.

**MAC:** The MAC address on the MS/TP network. This number must be unique within the network. Available values range from 1 to 127.

**Max Master:** Max\_Master must be large enough that all MS/TP MAC addresses are within it. If unsure, set to 127.

**120 Ohm Termination:** MS/TP networks require termination resistors on end-of-line devices. Turning on this setting will provide the required 120 Ohm termination on this BACnet device. Use this setting with great caution as adding termination resistance on a device in the middle of a network can cause significant network problems.

**Instance ID:** A unique ID number for the EV device object on the BACnet network (between 0 and 4194303). This is \*not\* a read only value.

**Device Name:** Name used to represent the device in the BACnet system.

**System Status:** Indicates that the valve is operational. A read only value. 0 is operational, 1 is not operational.

**Protocol Version and Revision:** These are read only values to show the BACnet protocol version and revision that the communication software follows.

**MS/TP Device Load:** The MS/TP interface on the Energy Valve will create a 5/8 unit load on the network. This is a combination of local biasing resistors and a 1/8 load EIA-485 driver chip. Please keep this load figure in mind while determining network device limits and repeater requirements. For reference, the EIA-485 specification allows for a total of 32 device loads on a network without using repeaters. The transceiver is isolated, but the isolated reference is not exposed due to lack of pins 47K pull up resistors are connected from the isolated common to – and isolated 5v to + and is fail safe.

### BACnet, MP-Slave and Modbus Settings

**Communication Protocol**

BACnet IP  
 BACnet MS/TP  
 MP  
 Modbus TCP  
 Modbus RTU  
 None

**BACnet MS/TP Settings**

Baud rate  
 MAC Address  
 Max Master  
 120 Ohm Termination

**Device Object Settings**

Instance ID  
 Device Name  
 Device Description  
 System Status  
 Protocol Version  
 Protocol Revision

# Cloud Settings

**Datalog Service Connection Status:** The status of the cloud connection.

**Cloud Server:** The address of the connected host Server.

**Datalog and Task Mode:** The connection to PUB nub status

**MAC Address:** The MAC address of the connected Energy Valve.

**Datalog Service:** Allows for data transfer between the Energy Valve and the cloud.

**Task Service:** Allows for automatic updating of the Energy Valve flow and Delta T setpoints based on data captured by the valve in the cloud.

**Update Mode:** Allows for automatic updating of the Energy Valve flow and Delta T setpoints based on data captured by the valve in the cloud.

**Log Levels:** Status of Java Log and System Log levels

**Disabled:** No updates are downloaded.

**Device\_Controlled:** Updates are shown on the Maintenance page in Webview and not installed automatically, they are offered.

**Cloud\_Controlled\_Manual:** The updates need to be released by the device owner in the cloud. The device installs the update immediately after release.

**Cloud\_Controlled Auto:** The updates are released by Belimo and propagated to the devices. The device installs the update immediately after release.

**Current owner:** The individual that has current ownership of the device. This is typically the name of the user that configured the cloud settings and corresponds to the email address provided on initial set up.

**Refresh Current owner:** Simple refresh button to explicitly ask the cloud to tell us the current owner (for example after the product was transferred in the cloud).

**New owner:** Used when starting a transfer from a current owner (or no owner yet) to a new owner which requires pressing the Transfer device button after new owner is entered.

**Additional Information:** By clicking on the load button displays more ownership information and device details.

**Connection Status:** Runs a routine that will help troubleshoot connection to the Belimo cloud.

**Connectivity Requirements:** Customer provided Ethernet Cable Dedicated Internet Connection.

**Requirements for Cloud Connection:** Gateway IP Address that allows a route to the internet.  
In case of DNS restrictions: IP addresses of internal DNS servers.

## Firewall rule to allow communication

Action: Pass / Allow

Address family: IPv4

Protocol: https over TCP

Source: IP address of device or subnet designated to EnergyValve devices

Destination: <https://connect.g2bcc.com>

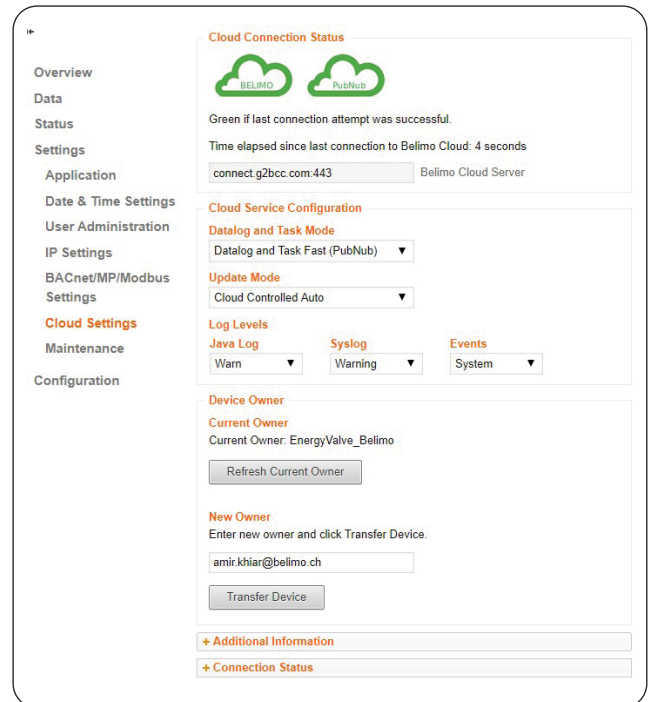
## Communication details

Used protocol is https

Port of the server endpoint: 443

DNS address of cloud server:

<https://connect.g2bcc.com>



# Maintenance

### Configuration Import /Export:

This feature allows the meter settings to be downloaded (export configuration) from one meter and imported to another meter via an XML file format. The meter size needs to be the same for this function.

**Software Updates:** Allow an update file to be loaded

**Misc:** Reboot - Performs the function of power cycling the meter for a restart. Factory Reset restores the meter settings to settings when it left the Belimo factory.

### Configuration Import Export

Choose File No file chosen Import Configuration

Export Configuration

---

### Activation Codes

Feature Name

Choose File No file chosen Upload And Apply Activation Code

---

### Software Update

Apply Available Updates Upload And Apply Update Files

---

### Configure encrypted connection to webservice

Keystore	Truststore

Configure Certificates Download Certificate

---

### Misc

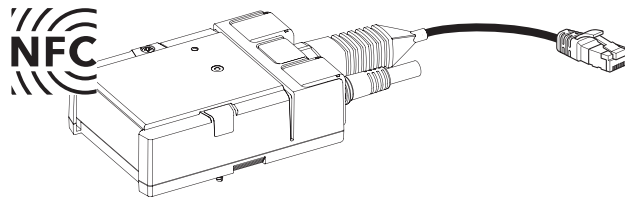
Reboot Factory Reset Reboot from Factory



## Exchanging the sensor module

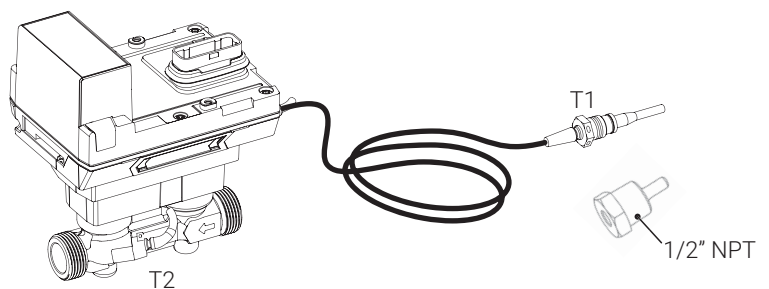
### Logic module of the thermal energy meter

The thermal energy meter is supplied with voltage via the logic module. The bus and NFC communication interface is also available on the logic module. If the sensor module is disconnected from the logic module for replacement, the connecting cables can remain connected to the logic module and the system.



### Sensor module of the thermal energy meter

The sensor module contains the integrated temperature sensor T2 and the external temperature sensor T1 is connected via a cable. If the sensor module is replaced, both temperature sensors T1 and T2 must also be replaced. The sensor module also houses the calculator unit and the ultrasonic flow measurement system.



# Exceptional service

For over 40 years, [Belimo](#) has successfully focused on the heating, ventilation, and air conditioning markets providing quality solutions that will increase energy efficiency and reduce installation costs with the fastest delivery times in the industry. Our innovative products have always been designed to help achieve objectives better, faster, and more economically. Investing in new technology is key to our success, and Belimo will continue to offer products to help businesses succeed.



5-year warranty



Global support



Tested quality



On-time delivery



Extensive service



Complete product range

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