



Characterised control valve (CCV) with adjustable flow rate and sensor-operated flow control, and power and energy-monitoring function

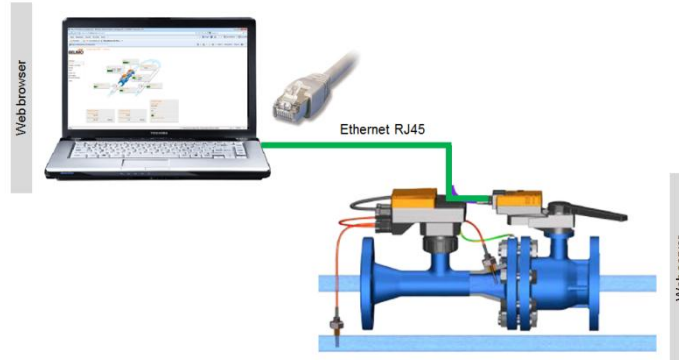
Contents

<u>General</u>	<u>2</u>
<u>Web server</u>	<u>3</u>
<u>Attachment</u>	<u>11</u>

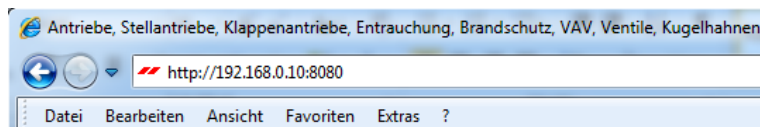
General

Access to the Energy Valve

- Connect the PC/Laptop to the Energy Valve with the RJ45 cable



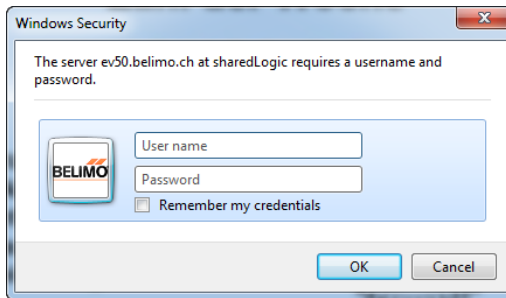
- Open Internet Explorer and enter the following address: **http://192.168.0.10:8080**



- 192.168.0.10 is the IP address assigned at the time of delivery
- Note: The Energy Valve must be supplied with voltage.

! If the IP address is changed, Belimo will not be able to reset it.

User name and password



- Access to the Energy Valve is password-protected
- 3 users have different reading and writing access

User name:	guest	maintenance	admin
Password:	guest	belimo	¹⁾
Dashboard	L	L	L
Overview	L	L/S	L/S
Override, Live Trend	L	L/S	L/S
Settings	L	L	L/S
Status	L	L/S	L/S
Date and Time Settings	-	L	L/S
IP Settings	-	L	L/S
Version Info	-	L	L
Data Logging	L	L	L/S
BACnet/MP Settings	L	L	L/S

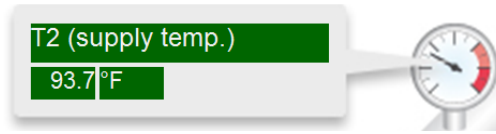
- Legend:
 L = Read access
 S = Write access
 - = Page is not displayed
¹⁾ = Please contact your Belimo Representative

General

(continued)

General information regarding operation

- A brief display of a value against a green background indicates that this value has changed

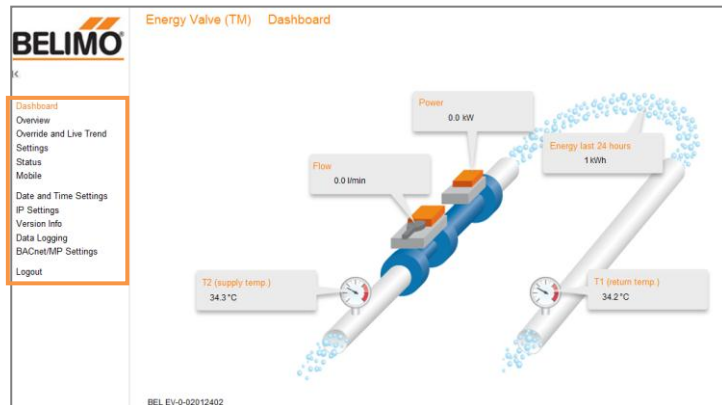


- Changing settings:
- When a new setting is selected (dropdown menu), it will be applied automatically
- A new value is applied automatically after it has been entered and the ENTER key has been pressed. It is not necessary to press a 'Save' button.

Web server

Dashboard

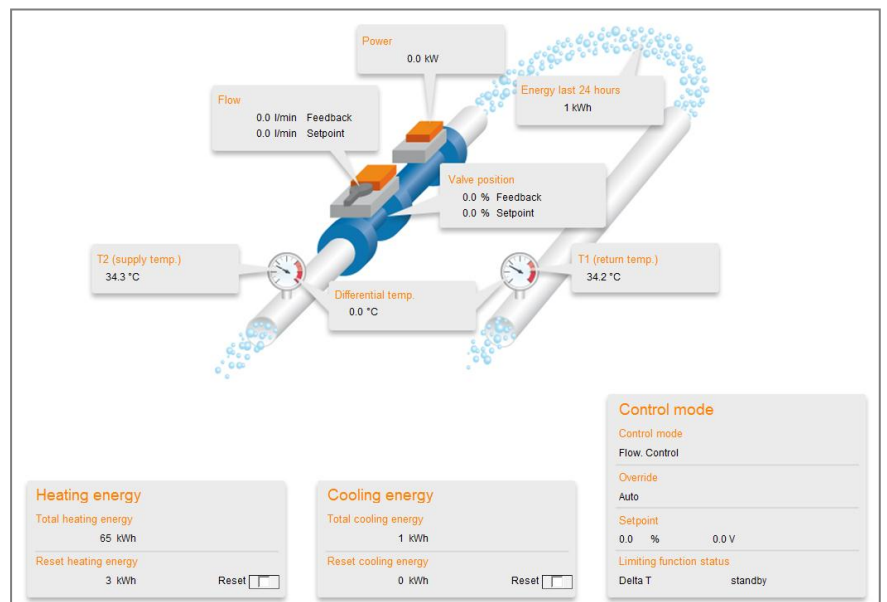
- After entry, the dashboard displays an overview of the most important ACTUAL values



- The navigation option for accessing the other pages is to be found on the left-hand side of the monitor

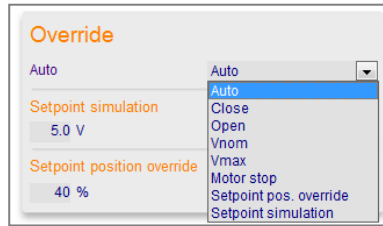
Overview

- In addition to the most important ACTUAL values, this page also shows the heating/cooling energy that has been consumed and the current NOMINAL values.



Override and Live Trend

- The current positioning signal can be overridden with the help of the Override function.



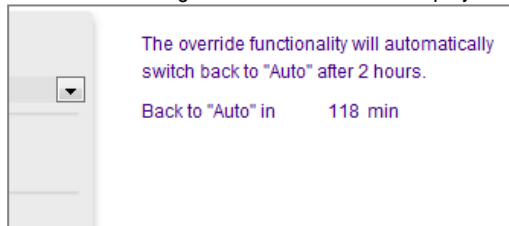
- The following options are available:
 - Auto:** No manual override
 - Close:** Valve is closed
 - Open:** Valve is opened completely
 - Vnom:** The nominal flow rate of the valve (catalogue value) is controlled ¹⁾
 - Vmax:** The set maximum volumetric flow (100% requirement) is controlled
 - Motor stop:** The actuator remains at its current position
 - Setpoint pos. override:** Regulation of a volumetric flow totaling X% of Vmax → *Enter percentage value!*
 - Setpoint Simulation:** Observation of the connection between control signal [V] and set flow rate characteristic (linear or equal percentage) → *Enter voltage [V]!*

¹⁾ As Vnom may be greater than the maximum required (set) Vmax of the installation, achieving the nominal volumetric flow Vnom is dependent on the output of the pump.

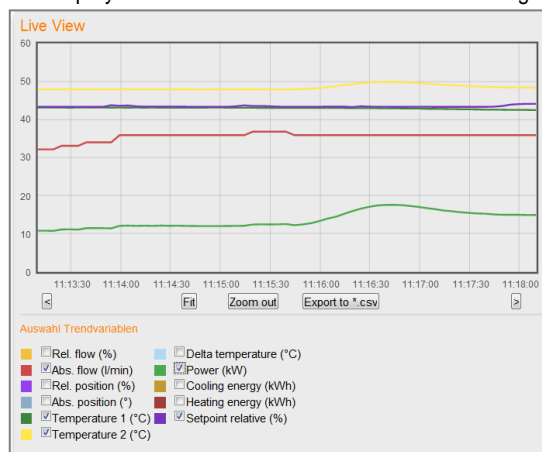
Note

The definition of the values V'nom and V'max is provided in the Appendix to this document.

- The override function is deactivated automatically after 2 hours.
- The time remaining before deactivation is displayed.



- The Live Trend function shows the valve values since entry/login and first clicking on "Override and Live Trend".
- The displayed values can be selected in the lower range.



Settings

- All settings can be made on this page.

Note

The various setting options are explained in detail below.

Settings - Application



The setting of the valve size may not be changed!

- Valve size
 - DN65 to DN150
- Installation position
 - The correct setting is important for the allocation of the consumed energy as cooling or heating energy
 - >: Valve installed in the supply line of the heat exchanger
 - <-: Valve installed in the return of the heat exchanger
- Medium
 - Selection of the medium used:
 - Water
 - Monoethylene glycol
 - 1.2 polypropylene glycol
- Concentration
 - Percentage concentration of the glycol
- Cable length
 - The cable length of the sensor which is away from the valve is setted to the correct value of 10 meters ex works.



The setting of the cable length may not be changed!

Settings - User

- Setting the desired language and value units

- | | |
|---------------------|---------------|
| Language | Power |
| ◦ English (*) | ◦ W |
| ◦ German | ◦ kW (*) |
| Temperature | ◦ BTU/h |
| ◦ °C (*) | ◦ kBTU/h |
| ◦ °F | ◦ Ton |
| Flow rate | Energy |
| ◦ m ³ /h | ◦ kWh (*) |
| ◦ l/s | ◦ MWh |
| ◦ l/min (*) | ◦ kBTU |
| ◦ l/h | ◦ TonH |
| ◦ GPM | |

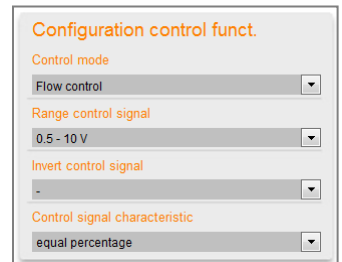
(*) = presetting ex-works

Web server

(continued)

Settings – Control function configuration

- Parameterisation of the analogue positioning signal Y
 - Control strategy
 - **Pos. control:** In this setting, the valve functions as a pressure-dependent valve, e.g. like a conventional characterised control valve
 - **Flow control:** Operation as a pressure-independent valve analogous to an EPIV
 - Control signal range
 - **0.5 – 10V DC**
 - **2 – 10V DC**
 - Control signal inversion
 - -: no inversion → 0V = valve closed / 10V = valve open
 - **yes:** inversion → 10V = valve closed / 0V = valve open
 - Control signal characteristic
 - **equal percentage:** equal-percentage characteristic curve
 - **linear:** linear characteristic curve

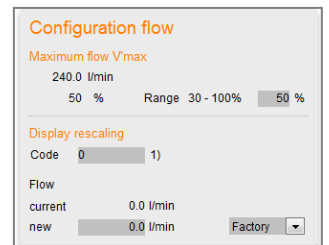


Settings – Flow rate configuration

Note

The definition of the values V'nom and V'max is provided in the Appendix to this document.

- Maximum flow rate V'max
 - This value is to be set on the basis of the design data of the consumer
 - Recommended setting range: 45 ... 100 of V'nom ¹⁾
 - (Possible setting range: 30 ... 100 of V'nom ¹⁾)
- 1) Vnom = nominal flow rate (catalogue value)



Note

The rescale of the flow rate affects the display only. The calculation of power and energy takes place with the original value.

- Rescale the flow rate display
 - This function is used in order to align the flow rate value output by the Energy Valve via feedback signal U5 to the flow rate value measured by an external measuring device.
 - For more details and to obtain the activation code, please contact your Belimo representative.

Settings – Temperature configuration

- This function is used in order to suppress a power/energy calculation at low differential temperatures.
- Permissible range: 0 – 2°C
- Factory setting: 0°C



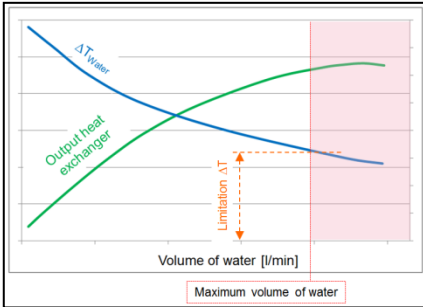
Web server

(continued)

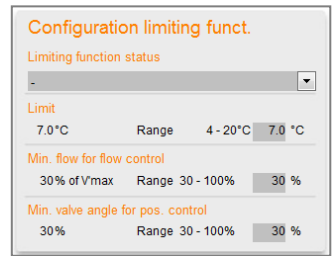
Settings – Configuration limitation

Note

If the Delta T limitation function is switched off, the all further settings are inactive.



- This function can be used in order to prevent an increase in the volumetric flow when levels fail to reach a set supply/return differential temperature.
- The valve will not be opened further in such cases, even with an increasing positioning signal
- Limitation function
 - -: Delta T limitation switched off
 - **Delta T:** Delta T limitation switched on
 - **Limit:** No increase in the volumetric flow when levels fall below this setting value
 - **Min. flow rate with flow rate control:** In the case of operation as a pressure-independent valve, the differential temperature is not controlled up to the adjusted flow rate (percentage of V'max).
Allowable input value: 30 ... 100%
 - **Min. valve opening with position control:** In the case of operation as a pressure-dependent valve, the differential temperature is not controlled up to the adjusted opening angle (percentage).
Allowable input value: 30 ... 100%



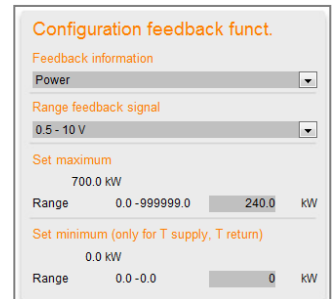
The limitation function is not active so long as a valid value has been entered in the input fields
 - *Min. flow for flow control (when control mode 'Flow control' is selected)*
 or
 - *Min. valve angle for pos. control (when control mode 'Pos. control' is selected)*

Settings – Feedback function configuration

Note

These settings configure the analogue feedback signal U5

- Feedback Information: U5 corresponds to one of the following values. The units correspond to the units set in the 'User' range.
 - **Flow:** Flow rate
 - **Power:** Current consumer power
 - **T supply:** Supply temperature
 - **T return:** Return temperature
 - **Delta T:** Differential temperature, supply and return
 - **Valve Position:** Valve opening angle [°]
- Feedback signal range:
 - 0 – 10V DC
 - 0.5 – 10V DC
 - 2 – 10V DC
- Upper limit selection: Setting the maximum value for the feedback signal
- 10V = set value
- Lower limit selection (only for T Supply, T Return): Setting the minimum value for the feedback signal
 - 0V = set value
 - Only when 'T supply' or 'T return' has been selected
 - 0V corresponds to the value 0 with all other selections



Web server

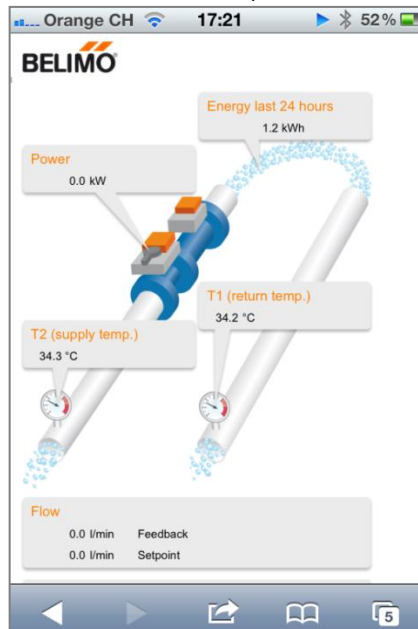
(continued)

- Status**
- Display of the current error messages and the error history
 - Current error messages are presented on the left-hand side
 - The error history is displayed on the right-hand side
 - The error history can be reset by users with the respective authorisation.

Status	History	Occured
	T1 missing / broken	0
	T1 short circuit	0
	T2 missing / broken	0
	T2 short circuit	0
	Flow sensor error	0
	Flow signal with closed valve	0
	Flow not realized	10
	Actuator cannot move	0
	Reset <input type="checkbox"/>	

An error is detected when a problem lasts for at least:
 30s for "T missing / broken", "T short circuit", "Flow sensor error" and "Flow with closed valve"
 600s for "Flow not realized"
 180s for "Actuator cannot move"
 The error is then displayed for at least 30s

- Mobile**
- For access with a view optimised with a smartphone

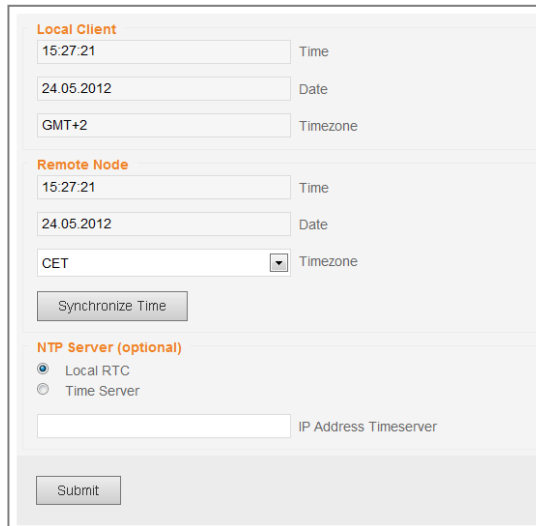


Web server

(continued)

Date & Time settings

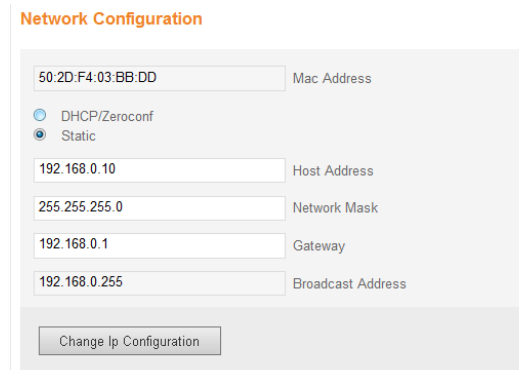
- Possible settings: Date, Time and Time Zone



- Local Client: Date and time of the connected PC
- Remote Node: Date and time which is set on the Energy Valve
- Synchronize Time: Clicking on "Synchronize Time" causes the Date and Time settings of the attached PC (Local Client) to be adopted on the Energy Valve (Remote Node). When using several Energy Valve it is possible to define one Energy Valve as the Time-Master. For this purpose the IP address of the Time-Master must be entered at all other Energy Valves.

IP Settings

- IP Settings



Web server

(continued)

Version Information

- Display of the current software and hardware version

Hardware	
13186-00001	OC Module Material Number
Software	
2.6.30-ksp0079-7.7.7G20	Operating System Version
1.24.1	Core Software Version
Application Model	
ev-app-0-01-010-012401.bcz	Model Name

Note

Please communicate the information on this page to your local Belimo representative in the event of malfunction.

Data Logging

- Download of the csv files stored in the Energy Valve

Filetype	
<input type="radio"/>	Short Term Storage (7 Days uncompressed)
<input type="radio"/>	Long Term Storage (Compressed)
<input type="button" value="Download"/> <input type="button" value="Erase Data Log"/>	

- **Short Term Storage:** One file is available per day for the last 7 days. A measurement series is stored every 30 seconds.
- **Long Term Storage:** One file is available per month for the last 13 months. A measurement series is stored every 2 hours.

Filetype									
<input checked="" type="radio"/>	Short Term Storage (7 Days uncompressed)								
<input type="radio"/>	Long Term Storage (Compressed)								
<table border="1"> <thead> <tr> <th>Filename</th> </tr> </thead> <tbody> <tr><td>Default Datalog Configuration-2012-05-18.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-19.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-20.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-21.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-22.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-23.csv</td></tr> <tr><td>Default Datalog Configuration-2012-05-24.csv</td></tr> </tbody> </table>		Filename	Default Datalog Configuration-2012-05-18.csv	Default Datalog Configuration-2012-05-19.csv	Default Datalog Configuration-2012-05-20.csv	Default Datalog Configuration-2012-05-21.csv	Default Datalog Configuration-2012-05-22.csv	Default Datalog Configuration-2012-05-23.csv	Default Datalog Configuration-2012-05-24.csv
Filename									
Default Datalog Configuration-2012-05-18.csv									
Default Datalog Configuration-2012-05-19.csv									
Default Datalog Configuration-2012-05-20.csv									
Default Datalog Configuration-2012-05-21.csv									
Default Datalog Configuration-2012-05-22.csv									
Default Datalog Configuration-2012-05-23.csv									
Default Datalog Configuration-2012-05-24.csv									
<input type="button" value="Download"/> <input type="button" value="Erase Data Log"/>									

- The files on the actuator can be deleted by users with the respective authorisation.



Deleted data cannot be restored!

Web server

(continued)

BACnet/MP Settings

- Selection of the communication protocol
 - BACnet IP
 - BACnet MS/TP
 - MP
 - None (conventional control)
- Perform all relevant settings in accordance with the specifications of the onsite equipment.

BACnet and MP Slave Settings

Communication Protocol

BACnet IP
 BACnet MS/TP
 MP
 None

BACnet IP Settings

47808 Port

Simple Device
 Foreign Device

IP BBMD

0 Time-to-Live

BACnet MS/TP Settings

76800 Baud rate

3 Address

120 Ohm Termination

Device Object Settings

154 Instance ID

EV_B4_I_EV Device Name

0 System Status

1 Protocol Version

6 Protocol Revision

MP Settings

2 MP Address

Submit

Logout

- Exiting the web server

Attachment

Definition of V'_{nom}

- Is the maximum possible flow rate and corresponds to approximately 2 to 2.4 m/s medium velocity in the connection pipe with the same DN size. (For DN 65, the cross-section is approximately $0.065 \text{ m}^2 \times \pi / 4 = 0.0033 \text{ m}^2$ and for 2.4 m/s medium velocity, this results in 480 L/min or 28.8 m³/h)

Definition of V'_{max}

- Is the maximum flow rate which has been set with the greatest positioning signal (10V). The V'_{max} can be set to between 45% and 100% of the V'_{nom} .

