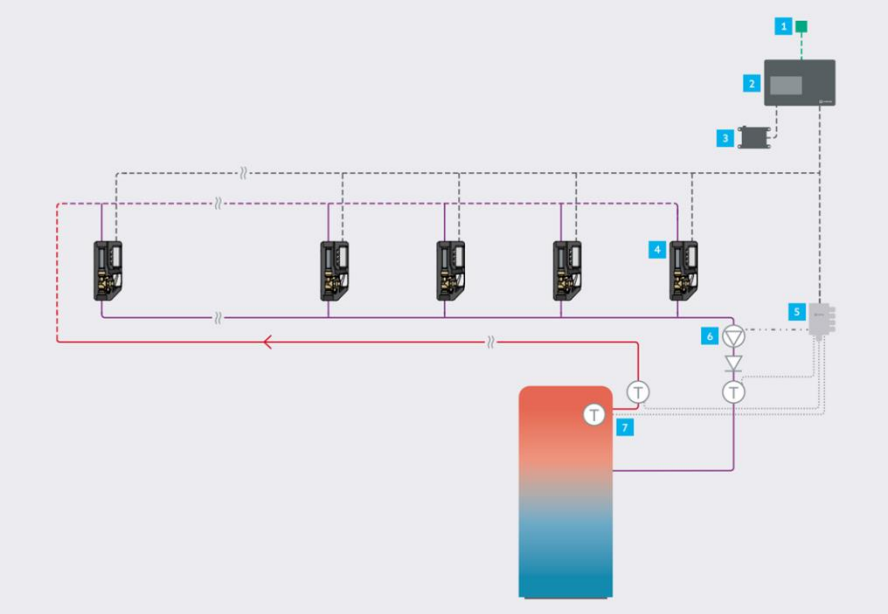
DynaTemp CW-BS

Thermal Balancing in Potable Water Circulation systems



1 Building automation
2 **DDC CW-BS** control unit with Ethernet connection
3 **TR-80** transformer
4 **Aquastrom DT** electronic circulation regulating valve
5 **FM-CW Plus** field module
6 Circulation pump
7 Temperature sensors:
- Hot water outlet
- Circulation return
- Storage cylinder temperature

The DynaTemp CW-BS offers a system solution for maintaining potable water hygiene in large buildings, such as hospitals, retirement homes or multiple dwellings by monitoring and controlling the potable water circulation temperature in accordance with DVGW.

In addition to hygiene maintenance, temporary thermal disinfection is also possible. Here, a start signal to the heat generator first increases the potable water temperature. Then the pipelines of the circulation system are sequentially raised to the set disinfection temperature.

For monitoring or visualisation tasks or to trigger warnings, the DDC can be integrated into an existing building automation system via BACnet IP.

Features

+ Sufficient potable water circulation
+ Maintenance of the required potable water circulation temperature
+ Permanent hydronic balancing
+ Continuous monitoring
+ Controlled thermal disinfection
+ Saving and logging of the measurement data

Product Details

DDC CW-BS Control Unit

The Aquastrom DT electronic circulation regulating valves with motorised actuators are connected to the C-bus via bus-compatible field modules. The integrated web server allows access to the system via PC and web browser. Here, settings can be made to the parameters (e.g. time profiles) via the user interface and trend data, the current status and the disinfection logs can be queried. Furthermore, the DDC features a BACnetIP interface for integrating the system into building automation.

Functions

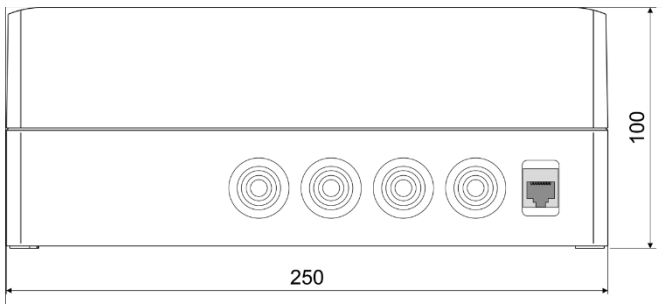
- Free network structure (e.g. tree structure)
- Shielded and twisted 2-wire line for communication and 2-wire lines for the supply voltage (4 cores in total)
- Short circuit proof, no terminal resistances
- Fast data updated with a data transmission of 14,4 kBits/s

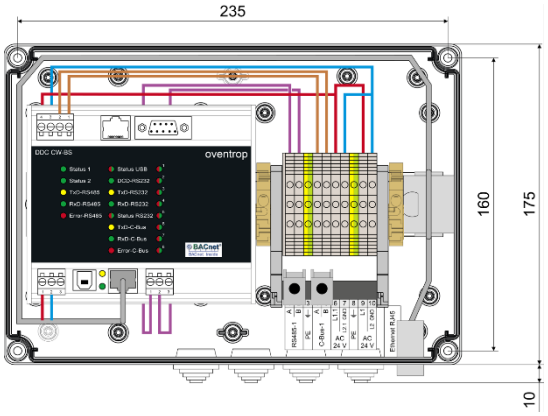
Technical Data

Item no.	1153350
Power consumption	24 VA
Operating voltage	24 V AC, - 10 %...+20%. 50 / 60 Hz
Line length C-bus	max. 1000 m
Interfaces	BACnetIP for building automation C-bus to the bus participants
Bus participants	Maximum of 31 participants
SD-RAM	32 MB main memory
NVRAM	2 MB data memory (buffered)
FLASH SD card	1 GB for programme and configuration data
Protection type	IP 30
Protection class	III according to EN 60730
Ambient temperature	0...+ 50 °C
Storage temperature	-20...+70 °C
Connection cables	0,5 mm² – 2,5 mm²
Cable entry	4 x stepped nipple M20

DDC item no. 1153350

Dimensions





Connection assignment DDC

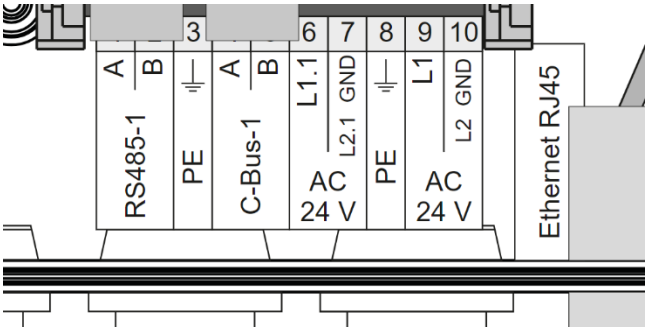
Designation	Terminal designation	Description
Plug X1	**Power feed-in**	**Permissible cable cross-sections 0.5 mm² – 2.5 mm²**
1	L1	AC 24 V
2	L2	GND / 0V
3	⏚	Housing earthing via top-hat rail
Socket X2	**US service**	**USB socket (type B) for communication and parameterisation via TCP/IP**
Socket X3	**Ethernet 10/100**	**Ethernet socket (RJ45) for communication and parameterisation via TCP/IP**
Socket X4	**RS485-1**	**Permissible cable cross-sections 0.5 mm² – 2.5 mm²**
1	A1	RS485-1, bus interface not used
2	B1	
3	Shield	Earthing / Shielding
Socket X7	**RS232-1**	**Serial interface for modem**
1	DCD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	-	-
Socket X8	**E-HMI**	**Not used**
Socket X9	**C-bus**	**Permissible cable cross-sections 0.5 mm² – 2.5 mm²**
1	A	C-bus, bus interface
2	B	
3	Shield	Earthing / shielding C-bus

Range of application, installation and mounting

The electrical connection must comply with the regulations of the local Electricity Board.

Always mount the housing vertically with the cable entries facing downwards and without distortion at all four fastening points provided, so that no moisture can penetrate, and the cover closes tightly.

When connecting to the DDC , cable cross-sections of 0.5 mm² – 2.5 mm² are possible.



Connecting block

Position	Designation	Description
1	A	RS485-1, bus interface, not used
2	B	
3	PE	PE, protective conductor
4	A	C-bus 1, bus interface
5	B	
6	L 1.1	AC 24 V, power supply field modules, **only connect** if no separate transformer supplies the modules with voltage.
7	L 2.1 GND	GND
8	PE	PE, protective conductor
9	L1	AC 24 V, power feed-in DDC-housing
10	L2 GND	GND

TR-80 transformer for power supply of the DDC

The TR-80 transformer is used to supply power to the control unit (DDC). Furthermore, depending on the number of field devices, the transformer is required for the power supply of the electronic circulation regulating valves and of the field modules.

Technical Data

Item no.	1153053
Electrical connection- primary	230 V / 50-60 Hz
Electrical connection - secondary	24 V AC
Secondary power	80 VA
Internal thermal fuse	110 °C
Protection type	IP 354
Protection class	II according to EN 60730
Ambient temperature	0...+ 40 °C
Storage temperature	-20...+60 °C
Humidity	5...95%, non-condensing

Aquastrom DT electronic circulation regulating valve

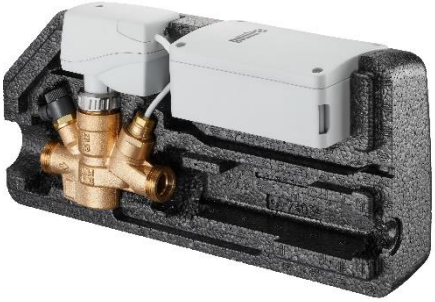
The Aquastrom DT is an electronically controlled circulation regulating valve made of bronze with temperature sensor PT 1000, drain valve, insulation shells, actuator and **FM-CW K field module (see page 6)** for electronic adjustment of the required residual volume flow in conjunction with the DDC CW-BS control unit. The circulation regulating valve is installed in the return pipes of circulation systems. It is used for hydronic balancing of the circulation pipelines with each other provided that the system is calculated correctly.

Aquastrom DT with internal thread

Nominal size/connection size	Item no.
DN 15, Rp 1/2 x Rp 1/2	1150004
DN 20, Rp3/4 x Rp 3/4	1150006
DN 25, Rp 1 x Rp 1	1150008

Aquastrom DT with external thread

Nominal size/connection size	Item no.
DN 15, G 3/4 x G 3/4	1150104
DN 20, G 1 x G 1	1150106
DN 25, G 1 1/4 x G 1 1/4	1150108



Technical Data - Valve

Max. control range		40 °C...90 °C
Factory setting		57 °C
Max. operating temperature		90 °C
Max. operating pressure		10 bar (PN10)
Max. differential pressure		1 bar
Mounting position		any, easily accessible
Residual volume flow		
	DN 15	K_v 0.09 m³/h
	DN 20	K_v 0.37 m³/h
	DN 25	K_v 0.49 m³/h
Max. volume flow		
	DN 15	K_v 1.5 m³/h
	DN 20	K_v 1.6 m³/h
	DN 25	K_v 1.7 m³/h

Technical Data - Actuator

Power supply	24 V AC/DC
Power consumption	2.5 VA
Connection thread	M 30 x 1.5
Length of connecting cable	300 mm
Positioning force	150 N
Control signal	0...10 V DC
Min. stroke position	<= 11.5 (0 V control voltage)
Max. stroke position	>= 15.5 (10 V control voltage)
Min. positioning stroke	4 mm
Positioning time	22 s/mm
Protection type	IP 40
Ambient temperature	0...50 °C

FM-CW Plus field module

The FM-CW Plus field module serves as interface of the DynaTemp system to the circulation pump, the storage cylinder loading pump and the service water mixing valve as well as for controlling a heat generator. Furthermore, temperature sensors of the circulation pipe, the supply pipe, the storage cylinder and the burner can be connected.

Technical Data

Item no.	1153321
Power supply	24 V AC
Power consumption	< AC 4.5 VA
Bus load	< 6 mA
Communication	C-bus (twisted, shielded 2-wire line)
Sensor inputs	3 x PT 1000 1/3 Din B
Input	1 x 230 V AC
Outputs	0 – 10 V DC 2x 230 V AC (max. 5 A)
Dimensions	128,8 x 81,8 x 53,3 (mm) (LxWxH)
Protection class	II
Protection type	IP 65
Ambient temperature	0...50 °C
Storage temperature	-20...70 °C
Screw connections	1 x M20 4x M16

REM-CW relay module

The REM-CW relay module is used to control a heat generator. On the one hand, the device is connected to the FM-CW Plus field module (AO – Analog-Out, 0 ...10 V, terminal X1-3) and, on the other hand, to an input of the control associated with the burner/boiler (e.g. remote unlocking. The potential-free relay contact for the connection of 24 V or 230 V switching contacts of the burner control unit provides galvanic isolation between the control units and expands the FM-CW Plus field module by an additional potential-free relay contact.

Technical Data

Item no.	1153331
Power supply	24 V AC
Power consumption	< AC 2 VA
Bus load	< 6 mA
Inputs	DI input for connection to FM-CW Plus output AO
Outputs	DO normally open contact (NO)
Dimensions	67 x 67 x 43,5 (mm) (LxWxH)
Protection class	II
Protection type	IP 65
Ambient temperature	0...50 °C
Storage temperature	-20...70 °C
Screw connections	2 x M 16

Accessories

	Description	Item no.
	Sensor LW TQ sensor element for remote monitoring of the pipeline temperature and for integration into a building management system (BMS), PT 1000, G ¼,	1150090
	Sensor LW TQ sensor element for remote monitoring of circulation pipes with Aquastrom VT, T plus, C, F, KFR and M, PT 1000, G ¼,	4205592
	Sensor LW TH temperature sensor for temperature measurement and detection in immersion sleeves and storage cylinders, sensor element PT 1000, continuous temperature range up to 105 °C, length 3 m	1369093
	Pipe contact temperature sensor for temperature measurement and detection at the pipework, with fastening clip Ø 25 – 40 mm and heat conducting paste, sensor element PT 1000, continuous temperature range up to 180 °C, length 1,5 m	1369095

FM-CW K field module (spare part for circulation valves)

The FM-CW K field module serves as interface between the DynaTemp system and the circulation regulating valve, which controls the volume flow of the potable water in the case of circulation in such a way that the temperature does not fall below a minimum temperature in all pipe sections.

Technical Data

Item no.	1153301
Power supply	24 V AC
Power consumption	< AC 4 VA
Communication	C-bus
Inputs	1 x PT1000, 1/3 DIN B
Outputs	1 x DO, 24 V AC, max. 1,2 A 1 x AO, 0 – 10 V DC, 10 mA
Dimensions	82 x 129 x 53 (mm) (LxWxH)
Protection class	III
Protection type	IP 65
Ambient temperature	0...60 °C
Storage temperature	-20...70 °C

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