

# ECH-8-DM

## Controller for water heaters / coolers with EC fan



The ECH-8-DM are controllers for water air coolers or hot water air heaters that are equipped with EC fans. Typically, they are used to cool or heat warehouses and industrial areas. The temperature setpoint can be steplessly adjusted via the potentiometer or the dedicated holding register through Modbus communication. It regulates an output (ON-OFF) to control a water valve or electric heater. The EC fan speed can be manually selected via the rotary switch with 7 positions (Automatic, 5 manual steps and OFF). In Automatic mode, EC fan speed is regulated automatically based on the ambient temperature. All settings can be adjusted via Modbus RTU communication.

### Key features

- Selectable range for the analogue output to control EC fan speed
- Unregulated output for water valve / electric heater control
- RGB LED for status indication
- Input for PT500 temperature sensor
- Temperature setpoint adjustment within 5–35 °C via:
  - Potentiometer
  - Dedicated holding register (Modbus communication)
- Control switch with 7 positions:
  - EC fan OFF
  - Manual speed selection (1 to 5)
  - Automatic fan speed control
- Heating/cooling mode can be selected via a jumper or via the Modbus registers
- Continuous variable fan speed control in automatic mode
- Modbus RTU communication

### Technical specifications

Temperature setpoint	5–35 °C	
Proportional range	2 °C, adjustable	
Enclosure	Plastic (R-ABS, UL94-V0, grey RAL 7035)	
Protection standard	IP54 (according to EN 60529)	
Ambient operating conditions	Temperature	-10–50 °C
	Rel. humidity	5–90% rH (non-condensing)

### Article codes

Article code	Supply voltage
ECH-8-DM	85–305 VAC / 50–60 Hz

### Area of use

- Warehouse air coolers equipped with an EC fan and a water valve
- The ideal controller for hot water air heaters in warehouses, sheds/stables, etc.
- Temperature-controlled ventilation systems
- For indoor use, surface wall-mounted

### Standards

- Low voltage (LVD) Directive 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

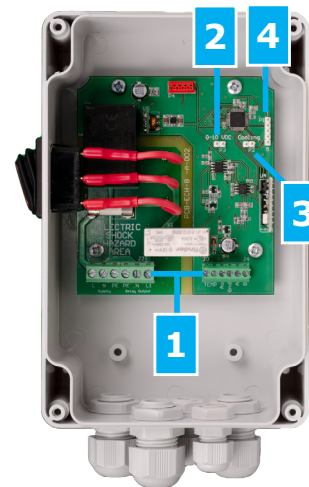


### Wiring and connections

L, N, PE	Supply voltage 85–305 VAC / 50–60 Hz
PE, N, L1	Unregulated output to control an external water valve or electric heater - I <sub>max</sub> 10 A
TEMP	Optional temperature sensor PT500 (type FLTSN-P500-010 or similar)
Ao, Gnd	Analogue output to control EC fan speed (0–6 VDC or 0–10 VDC) / Max. load 200 Ω
A, /B	Modbus RTU communication



### Legend



1 - Terminal block	
2 - Analogue output range selection	Jumper removed (default) - 0–6 VDC Jumper installed - 0–10 VDC
3 - Temperature mode selection	Jumper removed (default) - heating Jumper installed - cooling
4 - PROG header	Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
	Put a jumper onto pins 3 and 4 and restart the supply to enter bootloader mode

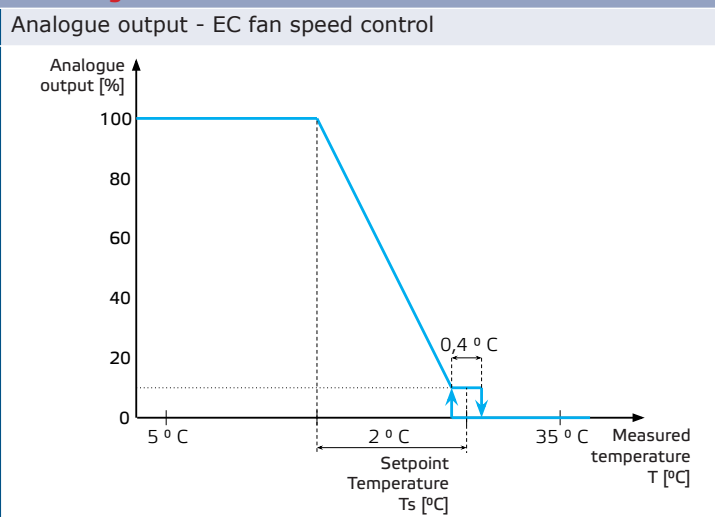
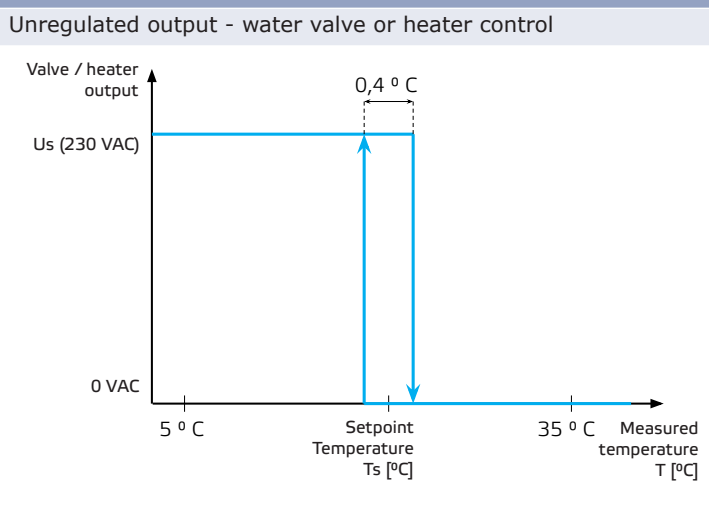


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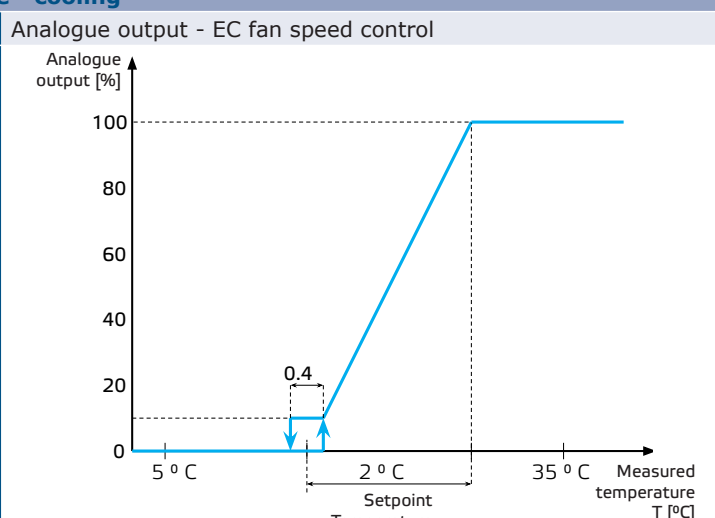
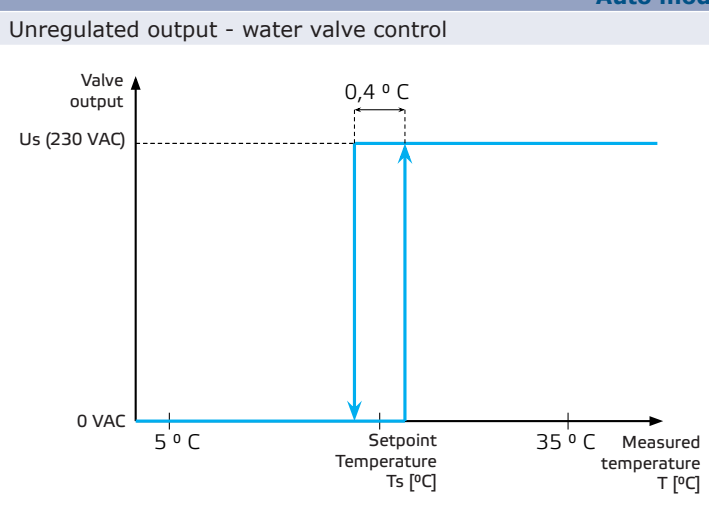
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### Operational diagrams

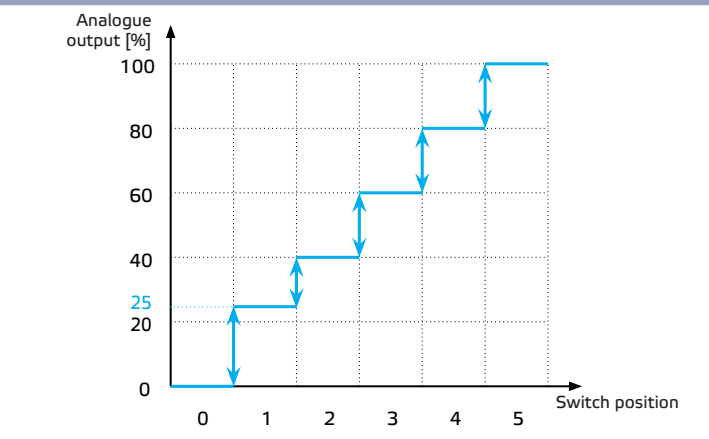
#### Auto mode - heating



#### Auto mode - cooling



#### Manual mode



	Heating	Cooling
$T > T_s$	Valve / heater output: 0 VAC EC fan speed: minimum value	Valve / heater output: 230 VAC EC fan speed: According to rotary switch position
$T < T_s$	Valve / heater output: 230 VAC EC fan speed: According to rotary switch position	Valve / heater output: 0 VAC EC fan speed: minimum value

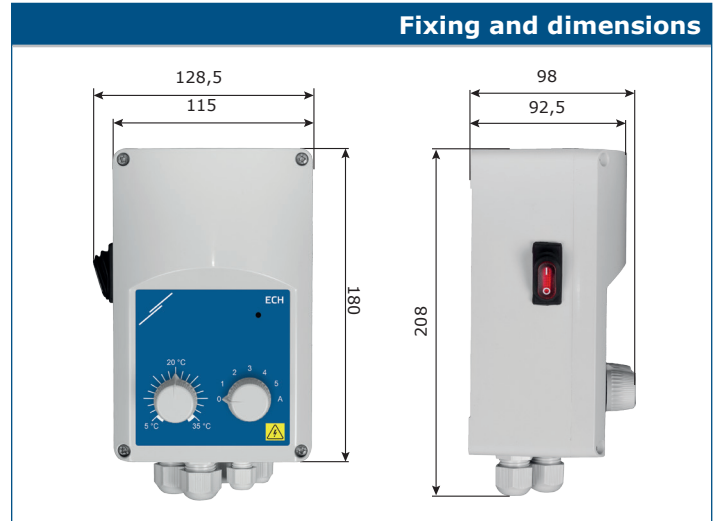
T – measured temperature  
Ts – temperature setpoint



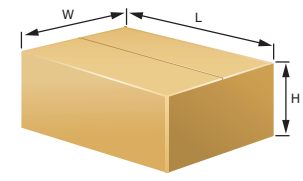
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Indications		
Operating description	Temperature range	LED
For the first three seconds after the device is turned on, the white LED will remain on constantly if the device is not calibrated—except in remote mode.	Start up	ON
Modbus connection is lost — only in remote mode and if the value of HR8 is not 0.		Blinking white
Short circuit on the TEMP contacts of the terminal block or the temperature is lower than the working range.	-10 °C	ON
Everything is OK, but the temperature is lower than the value of HR17.	-10 to +5 °C	ON
Everything is OK.	+5 to +35 °C	ON
Everything is OK, but the temperature is higher than the value of HR18.	+35 to +50 °C	ON
Temperature probe is not connected or the temperature is higher than the working range.	+50 °C	ON



**Packaging**



Article code	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight [kg]	Gross weight [kg]
ECH-8-DM	Unit (1 pc.)	210	125	105	0,51	0,61

**Global trade item numbers (GTIN)**

Packaging	ECH-8-DM
Unit	05401003018651
Box	05401003504260