

# UPZCV-3, 4, 6

Multi-zone valve control

Installation and operating instructions



**GRUNDFOS** 

# English (US) Installation and operating instructions

## Original installation and operating instructions.

These installation and operating instructions describe Grundfos UPZCV-3, -4, -6. Sections 1-4 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 5-8 give important information about the product, as well as information on service and disposal of the product.

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## 1. General information

### WARNING

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

This booklet should be left with the owner of the pump for future reference and information regarding its operation.



### WARNING

The use of this product requires experience with and knowledge of the product. Persons with reduced physical, sensory or mental capabilities must not use this product, unless they are under supervision or have been instructed in the use of the product by a person responsible for their safety. Children must not use or play with this product.



#### 1.1 UPZCV-3, -4, -6

This is a multi-zone valve control relay for domestic hydronic heating systems. It provides control when zoning with pumps or low voltage zone valves.

#### 1.2 Limited warranty

Products manufactured by GRUNDFOS are warranted to the original user only to be free of defects in material and workmanship for a period of 24 months from date of installation, but not more than 36 months from date of manufacture. GRUNDFOS' liability under this warranty shall be limited to repairing or replacing at GRUNDFOS' option, without charge, F.O.B. GRUNDFOS' factory or authorized service station, any product of GRUNDFOS' manufacture. GRUNDFOS will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by GRUNDFOS are subject to the warranty provided by the manufacturer of said products and not by GRUNDFOS' warranty. GRUNDFOS will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with GRUNDFOS printed installation and operating instructions.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of GRUNDFOS products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact GRUNDFOS or an authorized service station for instructions. Any defective product to be returned to GRUNDFOS or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

MANUFACTURER WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE. EXCEPT AS EXPRESSLY HEREIN PROVIDED THE GOODS ARE SOLD "AS IS", THE ENTIRE RISK AS TO QUALITY AND FITNESS FOR A PARTICULAR PURPOSE, AND PERFORMANCE OF THE GOODS IS WITH THE BUYER, AND SHOULD THE GOODS PROVE DEFECTIVE FOLLOWING THEIR PURCHASE, THE BUYER AND NOT THE MANUFACTURER, DISTRIBUTOR, OR RETAILER ASSUMES THE ENTIRE RISK OF ALL NECESSARY SERVICING OR REPAIR.

Some jurisdictions do not allow the exclusion or limitation of implied warranties of merchantability and fitness for a particular purpose, of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last or require you to pay certain expenses as set forth above. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

### 1.3 Symbols used in this document



#### WARNING

If you do not observe these safety instructions, it may result in personal injury.



#### WARNING

If you do not observe these instructions, it may lead to electric shock with consequent risk of serious personal injury or death.

#### CAUTION



If you do not observe these safety instructions, it may result in malfunction or damage to the equipment.

## 2. Receiving the product

### 2.1 Inspecting the product

Examine the components carefully to make sure no damage has occurred to the pump during shipment.

## 3. Installing the product

### WARNING

Electrical shock and potential circuit damage. Disconnect the power supply before beginning installation. All wiring must comply with national and local electrical codes, ordinances and regulations. Failure to follow electrical codes could result in serious personal injury, death, and property damages.

### CAUTION

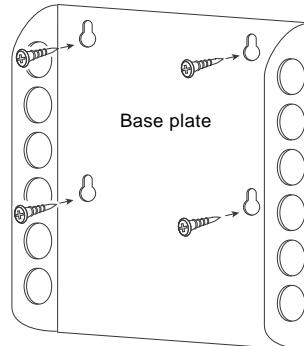
#### Caution

Disconnect the power supply before changing any DIP switch settings.

### 3.1 Mechanical installation

#### 3.1.1 Installing the base

Attach the base firmly to the wall surface with four screws and anchors using the key holes provided.



**Fig. 1** Attach the base plate to the wall with screws and anchors

### 3.2 Electrical installation

## CAUTION

Class 2 wiring must be segregated from the wiring of Class 1 circuits. When Class 2 wiring is routed with Class 1 wiring, the Class 2 wiring insulation must be rated for the minimum voltage of the Class 1 wiring. Segregation is not required if all circuits are wired as Class 1, electric light or power circuits.

#### 3.2.1 Wiring connections

- All electrical connections must be made using copper wire only.
- 12-16 AWG wire is recommended for 120 VAC connections.
- 12-22 AWG wire for thermostat connections.
- 12-22 AWG wire for 24 VAC connections.
- Use approved UL conduit fittings.

You can find additional wiring schematics, specs, and troubleshooting help online at [www.grundfos.us/controls](http://www.grundfos.us/controls).

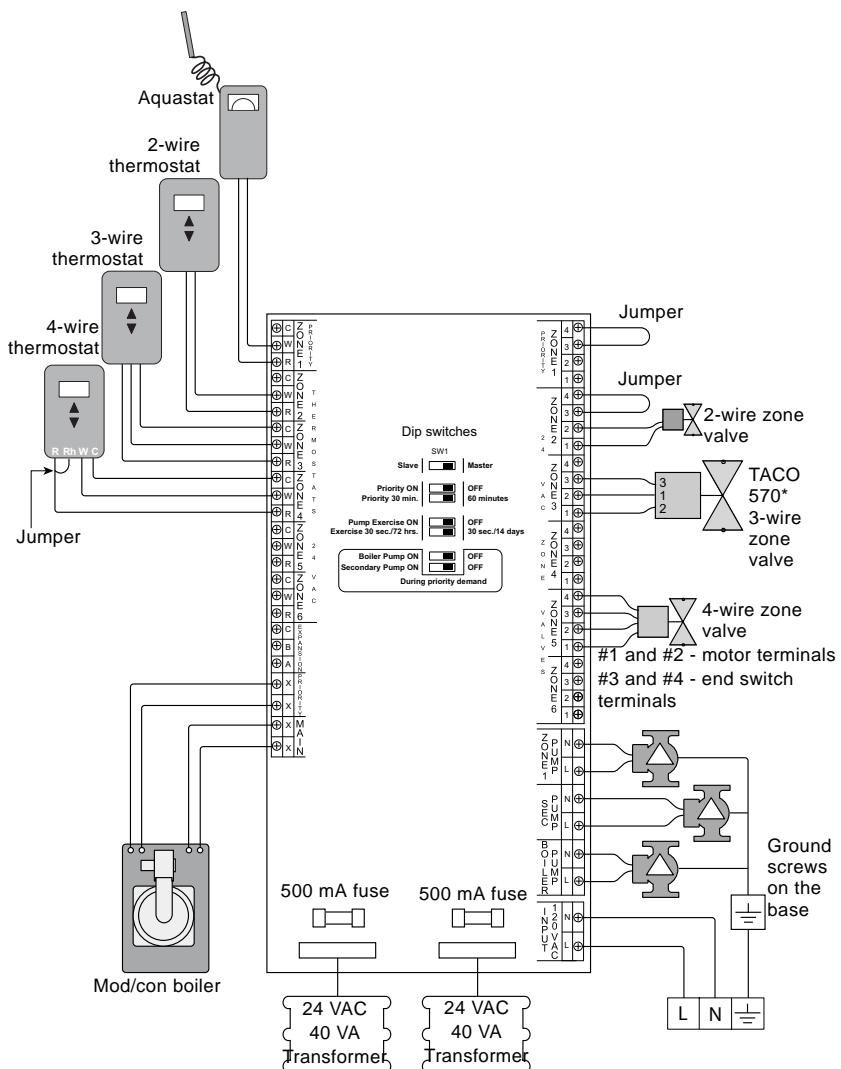


Fig. 2 UPZCV-6 multi-zone valve board layout

#### DIP switches

The DIP switch settings are also listed in section [4.2 DIP switch settings](#). See fig. 2.

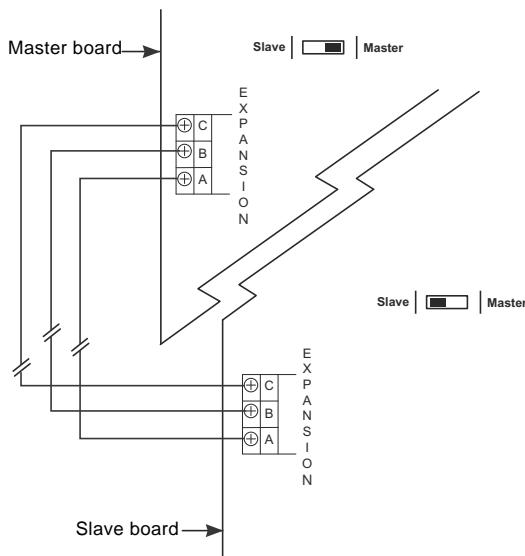
**Master/Slave:** Allows expansion to additional UPZC units.

**Priority ON:** Zone 1 operates as priority and the other zones are switched off for a selectable 30- or 60-minute timeout.

**Pump Exercise ON:** The pumps will operate for 30 seconds every 72 hours or every 14 days.

**Boiler ON/Secondary ON:** During the PRIORITY demand, select whether the PRIMARY PUMP is ON or OFF.

### Multi-zone valve board expansion



TM06 5606 5015

**Fig. 3** UPZCV multi-zone valve board expansion

See fig. 3.

- You can only use the MASTER controller with PRIORITY.
- When priority calls, the MASTER board will produce 5 VDC between terminals B and C. This tells the SLAVE board to turn off any zones that are calling for heat. This also will close the contacts XX PRIORITY.
- When there is a demand for heat, the SLAVE board will produce 5 VDC between terminals A and C. This tells the MASTER board to activate any boiler or secondary pumps and close the contacts XX MAIN.
- You can connect the pump and valve boards.
- When the SLAVE board calls for heat, the secondary pump will be powered. If a boiler pump and secondary pump are to be used, connect them to the same terminals.
- You can use the low voltage wire to connect the ABC terminals.
- Connect the 120 VAC power supply to each board.

## CAUTION

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**Caution**

Connect the L and N terminals the same way on each board. If switched, a differential of 240 VAC can occur resulting in damage to the equipment.

## 4. Starting up the product

### 4.1 LED diagnostics

The LED lights will be green when there is a call for heat.

The LED lights will turn amber when the zone valve end-switch is closed.

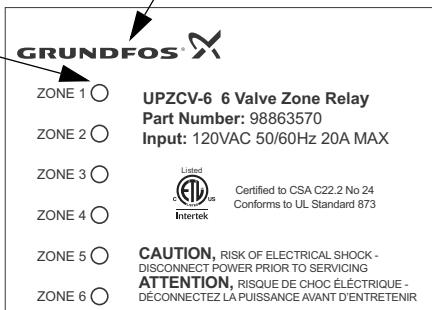


Fig. 4 The indicator lights located on the control plate

### 4.2 DIP switch settings

#### CAUTION

**Caution**

Disconnect the power supply before changing any DIP switch settings.

|                          |                                     |                 |
|--------------------------|-------------------------------------|-----------------|
| Slave                    | <input type="checkbox"/>            | Master          |
| Priority ON              | <input checked="" type="checkbox"/> | OFF             |
| Priority 30 min.         | <input checked="" type="checkbox"/> | 60 minutes      |
| Pump Exercise ON         | <input checked="" type="checkbox"/> | OFF             |
| Exercise 30 sec./72 hrs. | <input checked="" type="checkbox"/> | 30 sec./14 days |
| Boiler Pump ON           | <input checked="" type="checkbox"/> | OFF             |
| Secondary Pump ON        | <input checked="" type="checkbox"/> | OFF             |
| During priority demand   |                                     |                 |

#### Master/Slave

Allows expansion to additional Grundfos UPZC units.

#### Priority ON

Zone 1 operates as priority and the other zones are switched off for a selectable 30 or 60-minute timeout.

#### Pump Exercise ON

Pumps will operate for 30 seconds every 72 hours or every 14 days.

#### Boiler ON/Secondary ON

You can control the BOILER PUMP and SECONDARY PUMP to ON/OFF during PRIORITY demand.

## 5. Product introduction

### 5.1 Features and benefits

- Compatible with 2-, 3-, and 4-wire low voltage controllers or thermostats.
- Wiring ease with 120 VAC, ground and low voltage screw terminal inputs.
- Low voltage end-switch output terminals for the zone valves.
- Replaceable 40 VA transformer (snap-fit) for the zone valve controllers only.
- Zone priority with selectable time-out feature.
- Pump exercise feature, selectable 72 hours or 14 days.
  - The pumps will be turned on for 30 seconds every 72 hours or 14 days in order to prevent pumps from seizing up. This feature will only work if there is a jumper wire connecting the ZR ZC terminals on the pump controller.
- Boiler demand terminals.
  - The two terminals, labeled MAIN XX, are wired to the boiler. When the contacts close, the boiler starts and will come up to a preset temperature for hydronic heating.
- DHW terminal.
  - The two terminals, labeled PRIORITY XX, are wired to the boiler. When the contacts close, the boiler starts and will come up to a preset temperature for domestic hot water heating.
- Front facing LED indicator lights on the cover.
- Side-mounted terminal connections for ease of wiring and installation.

### 5.2 Identification

#### 5.2.1 Part numbers

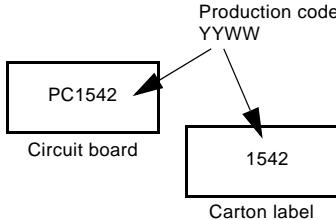
| Model   | Description              | Part number |
|---------|--------------------------|-------------|
| UPZCV-3 | Three-valve zone control | 98863567    |
| UPZCV-4 | Four-valve zone control  | 98863568    |
| UPZCV-6 | Six-valve zone control   | 98863570    |

#### 5.2.2 Production code

The production code represents the date of manufacture. You find the production code on the circuit board and the carton label.

##### Example:

PC 1542 = year 2015, week 42.



**Fig. 5** Locating production code

## 6. Servicing the product

### 6.1 Service parts

| Part               | Description   | Part number |
|--------------------|---|-------------|
| 24 VAC transformer | Kit, UPZC transformer, 24 VAC - 40 VA                 | 98996452    |
| 5 A fuse           | Kit, UPZC pump fuse, 5-pack                           | 98996468    |
| 250 mA fuse        | Kit, UPZC transformer fuse, pump board 250 mA, 5-pack | 98996472    |
| 500 mA fuse        | Kit, UPZC transformer fuse, pump board 500 mA, 5-pack | 98996473    |

## 7. Technical data

|   | Three-zone valve         | Four-zone valve                      | Six-zone valve                          |
|---|--------------------------|--------------------------------------|---|
| Model number  | UPZCV-3                  | UPZCV-4                              | UPZCV-6                                 |
| Part number   | 98863567                 | 98863568                             | 98863570                                |
| Input power 60 Hz                                     |                          | 120 VAC                              |   |
| Transformer voltage                                   | 24 VAC<br>40 VA, Class 2 | 24 VAC<br>40 VA, Class 2             | 24 VAC<br>80 VA (40 VA x 2),<br>Class 2 |
| Thermostat output [A]                                 | 0.375                    | 0.5                                  | 0.75                                    |
| Maximum single phase motor rating,<br>per zone [A]    |                          | 5                                    |   |
| Maximum combined load rating:<br>output @ 120 VAC [A] |                          | 20                                   |   |
| Temperature range (storage) [°F (°C)]                 |                          | 50-100 (10-38)                       |   |
| Temperature range<br>(maximum operation) [°F (°C)]    |                          | 0-100 (-18 - +38)                    |   |
| Maximum operating humidity range<br>[%] RH            |                          | 90                                   |   |
| Number of knockouts                                   |                          | 12                                   |   |
| Size of knockouts [in. (mm)]                          |                          | 0.875 (22)                           |   |
| Dimensions, W x H x D [in. (mm)]                      |                          | 8.15 x 10.67 x 2.72 (208 x 272 x 70) |   |
| Approvals   |                          | CSA 22.2 No. 24/UL Standard 873      |   |
| Relay type  |                          | Sealed                               |   |
| Cover panel   |                          | ABS - fire rated                     |   |
| Base material   |                          | Galvanized steel                     |   |
| Terminal block (side mounted)                         |                          | PA66                                 |   |
| Front display lights                                  |                          | LED                                  |   |

## 8. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.



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