

## Operating instructions

Heating actuator 6-gang with controller  
Order no. 2139 00



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## 1 Safety instructions



Electrical devices may be mounted and connected only by electrically skilled persons.

Serious injuries, fire or property damage are possible. Please read and follow the manual fully.

Danger of electric shock. Always disconnect before carrying out work on the device or load.

Danger of electric shock. Device is not suitable for disconnection from supply voltage. The load is not electrically isolated from the mains even when the device is switched off.

These instructions are an integral part of the product, and must remain with the end customer.

## 2 Device components

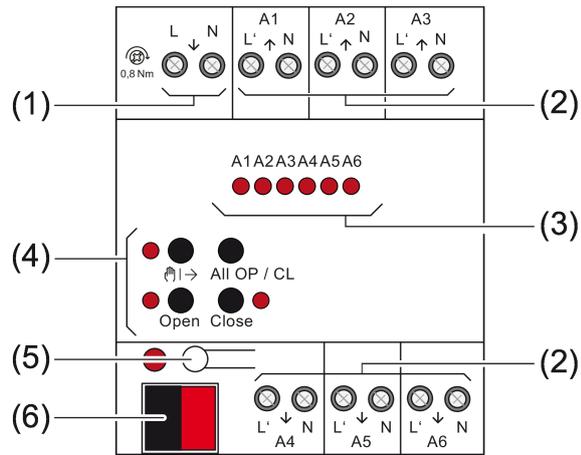


Figure 1: Front view

- (1) Supply of electrothermal valve drives
- (2) Connection of electrothermal valve drives (A1 to A6)
- (3) Status LEDs for outputs
- (4) Button field for manual operation
- (5) Programming button and LED
- (6) Bus connection

**i** If all of the status LEDs (3) are flashing (2 Hz), the device is indicating that there is no power supply to the electrothermal valve drives (1).

### 3 Function

#### Intended use

- Switching of electrothermal valve drives for heaters or cooling ceilings
- Operation in Gira One system
- Installation in sub-distribution units on DIN rail according to DIN EN 60715

#### Product characteristics

- The outputs are short-circuit and overload-protected.
- Valve drives controllable with 24 V or 230 V rated voltage.
- Manual control of the outputs.
- Programming and commissioning with the Gira Project Assistant (GPA), version 5 or higher.
- Updating via the Gira Project Assistant (GPA).
- Encrypted data transmission between the Gira One devices.
- Valve activation can be configured with characteristics "deenergised opened" or "deenergised closed" for each output.
- Protection against jamming valves.
- 6 independent controllers for heating and cooling mode.
- Type of heating control adjustable. Continuous PI control or switching 2-point feedback control.
- Operating modes: comfort, standby, night and frost/heat protection.
- Limiting value presetting for the floor temperature.
- Automatic open window detection in case of temperature drop.

#### Overload / short-circuit protection

In order to protect the device and connected valve drives, in case of overload or short-circuit the device determines which output is involved and switches it off. Non-overloaded outputs continue to work, which means that the rooms in question are still heated.

- In the event of an overload, group monitoring switches off the affected output group A1...A3 or A4...A6 first.
- Unambiguous monitoring determines the overloaded output in up to 4 test cycles.
- If in the event of only a minor overload it is not possible to unambiguously identify any output as overloaded, then the actuator switches individual outputs off one after the other.

LED display:

All status LEDs of the affected valve group flash synchronously during the test (1s flash -> 1s pause -> 1s flash -> ...).

- Overload: Status LED of the identified output flashes continuously (approx. 2 Hz): Test cycle completed.
- Short-circuit: Status LED of the identified output flashes continuously (approx. 1 Hz): Test cycle completed.

## 4 Operation

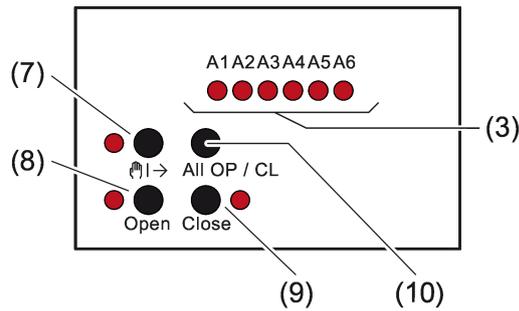


Figure 2: Operating elements

- (3) Status LEDs for outputs
- (7) button – Manual operation  
LED - On: permanent manual operation mode active
- (8) **Open** button – Open valve  
LED – On: valve opened, manual operation mode
- (9) **Close** button – Close valve  
LED – On: valve closed, manual operation mode
- (10) **ALL OP / CL** button – Central operating function for all outputs in case of permanent manual operation: Open and close all valves alternately

### Status display and output behaviour

The status LEDs A1...A6 (3) show whether the current flow is switched on or switched off at the appropriate output. The connected heating or cooling valves open and close according to their characteristics.

Valve drive	Status LED on	Status LED off
Deenergised closed	Heating/cooling Valve opened	Valve closed
Deenergised opened	Valve closed	Heating/cooling Valve opened

- Status LED flashes slowly: output in manual operation mode
- Status LED flashes quickly: output disabled via permanent manual operation mode

### Operating modes

- Bus operation: operation via push-button sensors, for example
- Temporary manual operation mode: manual operation on device with button field, automatic return to bus mode
- Permanent manual operation mode: exclusively manual operation on the device

No bus operation is possible in manual mode.

All controlled valve outputs switch off after bus voltage failure.

### Switching on temporary manual operation mode

Operation is not disabled.

- Press the  button briefly.  
Status LED A1 flashes, LED  flashes.

 After 5 seconds without button actuation, the actuator returns automatically to bus mode.

### Switching off temporary manual operation mode

The device is in short-term manual mode.

- No button has been actuated for 5 seconds.  
- or -
- Press the  button briefly as many times as necessary until the actuator exits temporary manual operation mode.

Status LEDs A1...A6 no longer flash, but indicate the status.

### Switching on permanent manual operation mode

Operation is not disabled.

- Press the  button for at least 5 seconds.  
LED  is illuminated, status LED A1 flashes, permanent manual operation mode is switched on.

### Switching off permanent manual operation mode

The device is in permanent manual operation mode.

- Press the  button for at least 5 seconds.  
LED  is off, status LEDs A1...A6 no longer flash, bus mode is switched on.

### Operating the outputs

In manual operation mode the outputs can be operated instantly.

The device is in permanent or temporary manual operation mode.

- Press the  button briefly, < 1 s, as many times as necessary until the desired output is selected.

The status LED of the selected output A1...A6 flashes.

The LEDs **Open** and **Close** indicate the status.

- Press the **Open** button.  
Valve opens.
- Press the **Close** button.  
Valve closes.

The LEDs **Open** and **Close** indicate the valve status.

- i** Short-term manual mode: After running through all of the outputs the device exits manual mode after another brief actuation.

### Operating all outputs simultaneously

The device is in permanent manual operation mode.

- Press the **ALL OP / CL** button.  
All the valves open and close alternately.

In contrast to the operating function using the OPEN or CLOSE buttons, the actuator always activates the valve outputs with a constant signal (0% or 100%), when they are activated simultaneously. This causes the valves to close or open completely. No pulse width modulation is executed.

### Disabling individual outputs

The device is in permanent manual operation mode.

- Press the button  briefly as many times as necessary until the desired output is selected.  
The status LED of the selected output flashes.
- Press buttons **Open** and **Close** simultaneously for at least 5 seconds.  
Selected output is disabled.  
The status LED of the disabled output flashes quickly.
- Deactivate permanent manual operation mode (see chapter "Operation" ▶ Page 8).

- i** A disabled output can be operated in manual mode.

### Re-enabling outputs

The device is in permanent manual operation mode.

- Press the button  briefly as many times as necessary until the desired output is selected.
- Press buttons **Open** and **Close** simultaneously for at least 5 seconds.  
Selected output is enabled.  
Status LED of the enabled output flashes slowly.
- Deactivate permanent manual operation mode (see chapter "Operation" ▶ Page 8).

## 5 As-delivered state

In the as-delivered state, the device enables manual operation on the device itself, provided that the voltage supply to the valve drives and the bus voltage are switched on.

In the as-delivered state, all the valve outputs are configured as follows:

- Valve direction of action: Deenergised closed
- Pulse width modulation on "Open valve": 50%
- Cycle time: 20 minutes
- Behaviour in case of bus voltage failure: Valves set to deenergised state (valve outputs switched OFF)
- Behaviour in case of bus voltage return: Valves set to deenergised state (valve outputs switched OFF)

## 6 Information for electrically skilled persons

### 6.1 Mounting and electrical connection



#### **DANGER!**

Mortal danger of electric shock.

Disconnect the device. Cover up live parts.

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#### Mount device

- Enter or scan the device certificate and add it to the project. A high resolution camera should be used to scan the QR code.
- The device certificate should be removed from the device during mounting.
- Document all passwords and keep them safe.

Observe ambient temperature. Ensure adequate cooling.

- Mount device on DIN rail.

#### Connect device

Connect either AC 230 V or AC 24 V valve drives to all the outputs.

Only connect valve drives with the same characteristics to each output (deenergised closed/opened).

Do not connect any other loads.

Connect valve drives for frost-sensitive rooms to outputs A1 and A4. These are switched off last in the event of overload.

Do not exceed maximum number of valve drives per output .

Observe the technical data of the valve drives used.

Do not connect the neutral conductor from the output terminals through to additional devices.

- Connect AC 230 V valve drives according to the connection diagram (see figure 3). The neutral conductors of the actuators can either be connected directly to the N terminals of the outputs of the heating actuator (left-hand connection example) or, alternatively, jointly with a suitable N potential (e.g. N conductor terminal in the distributor) (right-hand connection example). It is not absolutely necessary to connect the neutral conductor of the actuators directly to the actuator.

-  The neutral conductor terminals of the valve outputs are bridged internally in the device. Only use the neutral conductor terminals of the outputs for the connections of the actuators of an actuator.

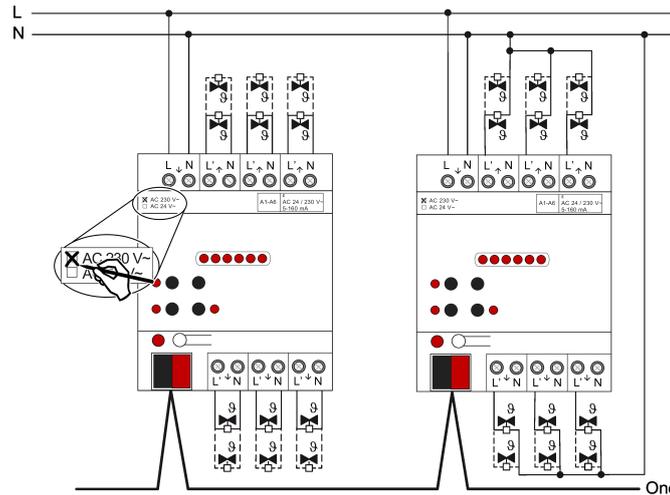


Figure 3: Connection for AC 230 V actuators (connection examples)  
 Left: Neutral conductor of the actuators run separately to the actuator  
 Right: Shared neutral conductor for actuators

- Connect AC 24 V valve drives according to the connection diagram (see figure 4). It is possible to connect the actuators individually and directly with the terminals of the outputs of the heating actuator (left-hand connection example) or, alternatively, using a shared conductor (right-hand connection example).

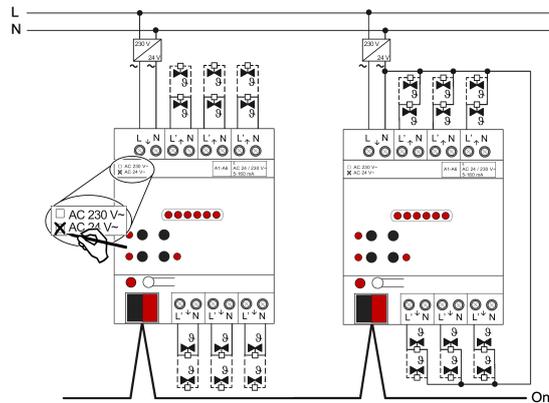


Figure 4: Connection for actuators AC 24 V  
 Left: Isolated connection of the actuators, separately on the actuator  
 Right: Shared conductor for actuators

- i** The terminals of the valve outputs indicated with "(N)" are bridged internally in the device. The terminals may only be used for the connection of the actuators of an actuator. Never connect N potential (mains voltage)!
- Connect the supply for the valve drives to the terminals ↓(L) and ↓(N) (1).
- Connect bus line with device connection terminal observing the correct polarity.
- Attach the cover cap to the bus connection as protection against hazardous voltages.

## 6.2 Commissioning

The device is commissioned with the Gira Project Assistant (GPA) version 5 or higher.

### 6.2.1 Safe-state mode and master reset

#### Safe-state mode

The safe-state mode stops the execution of the program.

- i** Only the system software of the device is still functional. Diagnosis functions and programming of the device are possible. Manual operation is not possible.

#### Activating safe-state mode

- Switch off the bus voltage or remove the device connection terminal.
- Wait about 15 s.
- Press and hold down the programming button.
- Switch on the bus voltage or attach the device connection terminal. Release the programming button only after the programming LED starts flashing slowly.

The safe-state mode is activated.

#### Deactivating safe-state mode

- Switch off the bus voltage (wait approx. 15 s) or carry out programming.

#### Master reset

The master reset restores the basic device settings (firmware remains in place). The device must then be recommissioned with the GPA. Manual operation is possible.

#### Performing a master reset

Precondition: The safe-state mode is activated.

- Press and hold down the programming button for > 5 s.  
The programming LED flashes quickly.

The device performs a master reset, restarts and is ready for operation again after approx. 5 s.

**7 Technical data**

Rated voltage	DC 21 ... 32 V SELV
Current consumption	4.5 ... 10 mA
Heating outputs	
Contact type	Semi-conductor (Triac), $\epsilon$
Switching voltage	AC 24 / 230 V ~
Mains frequency	50 / 60 Hz
Switching current	5 ... 160 mA
Switch-on current	max. 1.5 A (2 s)
Switch-off current	max. 0.3 A (2 min)
Number of drives per output	
230 V drives	max. 4
24 V drives	max. 2
Housing	
Installation width	72 mm / 4 HP
Connection of outputs	
Connection mode	Screw terminal
Single stranded	0.5 ... 4 mm <sup>2</sup>
Finely stranded without conductor sleeve	0.5 ... 4 mm <sup>2</sup>
Finely stranded with conductor sleeve	0.5 ... 2.5 mm <sup>2</sup>
Ambient conditions	
Ambient temperature	-5 ... +45°C
Storage/transport temperature	-25 ... +70°C
Connection torque for screw terminals	Max. 0.8 Nm

## 8 Troubleshooting

### Valve drives of an output or all outputs do not switch

Cause: An output is overloaded.

Determine cause of the overload switch-off. Eliminate short-circuits, replace defective valve drives. Check number of valve drives connected to the output, reduce if necessary. Do not exceed max. switching current.

Reset overload switch-off: disconnect device from mains completely for approx. 5 seconds, switch off miniature circuit-breaker. Then switch on again.

- i** In case of overload, initially one or both output groups switch off for approx. 6 minutes. After that the device determines which output is overloaded and switches it off permanently. This rest and test phase lasts 6 to 20 minutes.
- i** After resetting of the overload switch-off it is no longer possible for the device to determine which output is overloaded. If the cause is not eliminated, overload switch-off will occur again.

## 9 Parameter list

The following parameters are available for the individual buttons or rockers, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Valve in voltage-free state (direction of action)	open closed
<p>Both deenergised closed and deenergised opened valve drives can be connected to the outputs of the heating actuator. By means of this parameter you can set how the connected valve drive behaves in the deenergised state.</p> <p>Only valve drives with the same characteristics may be connected to each valve output (deenergised closed/opened).</p>	
Type of heating control	continuous PI control switching 2-point feedback control
<p>This parameter defines the type of heating control.</p> <p><b>continuous PI control</b> Optimised for electrothermal valve drives, e.g. 2169 00. The output is not permanently actuated, but only for a time period dependent on the difference between the target temperature and the actual temperature. This method brings the actual temperature gradually closer to the target temperature.</p> <p><b>switching 2-point feedback control</b> The output remains switched on until the selected target temperature has been exceeded by 0.5 °C. The output will not be switched on again until the target value is undercut by 0.5 °C. Since most heating systems respond very slowly, this type of control can entail temperature overshooting.</p>	
Open window detection in case of temperature drop	Off 0.2 K/4 min 1 K/4 min
<p>Here you can set the temperature drop at which the open window detection is to be activated.</p>	
Duration of frost protection mode	4 ... 255 min
<p>Here you can set the duration for how long the frost protection mode is to remain active after an open window is detected.</p> <p>(This parameter is only visible when the open window detection has been switched on.)</p>	
Boost period	1 ... 60 min
<p>This parameter defines the duration of the BOOST function.</p>	
Maximum temperature (for underfloor heating systems)	10 ... 45 °C
<p>Here you can specify the maximum temperature that can be set for the underfloor heating.</p>	

Minimum temperature (for underfloor heating systems)	10 ... 45 °C
Here you can specify the minimum temperature that can be set for the underfloor heating.	

## 10 Warranty

The warranty is provided by the specialist trade in accordance with statutory requirements. Please submit or send faulty devices postage paid together with a fault description to your responsible salesperson (specialist trade / installation company / electrical specialist trade). They will forward the devices to the Gira Service Center.

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