

UZR – URANOS ZONE REGULATOR

SYSTEM **URANOS**


Zone controller

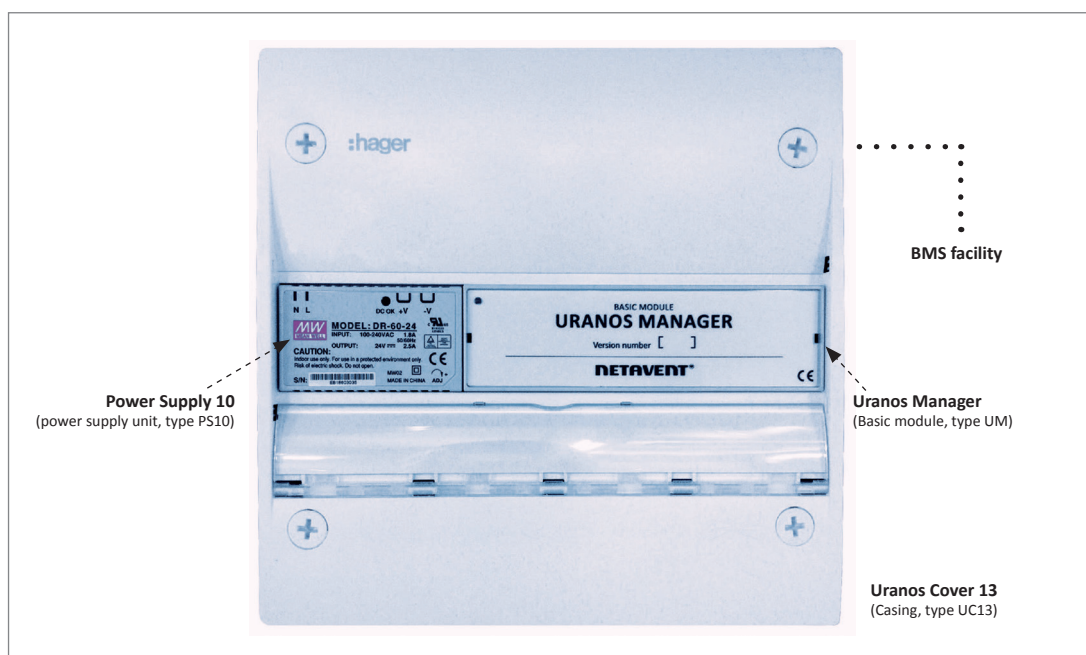
The control system, Uranos Zone Regulator, is used to regulate:

- Air balance.
- Min. and max. air flow.
- Temperature (°C) and air quality (CO₂).
- Energy operation (high/low air exchange).

Control is applied according to the current needs in the room/zone, combined with specific functional requirements. The basic module, Uranos Manager, acts as the central control unit and is interconnected with various components to meet the specific function requirements.

The base module uses RS485 as physical interface and all communication with the included components uses Modbus RTU as a communication protocol. The controller can operate independently of a BMS as a stand-alone unit, but is prepared for communication via superior BMS which allows:

- Troubleshooting of the system.
- Reading of operational status.
- Control of selected parameters.



Uranos Zone Regulator can additionally be supplemented with motion/occupancy detector for ceiling mounting and flashing light for visual alarm (not included in the above overview). Please see the order specification section for all system components at the end of this brochure.

Beneficial and energy saving properties

The Uranos Zone Regulator has a number of control functions which optimize operation and contribute to significant energy savings. The system also puts user safety and comfort in focus.

Uranos Zone Regulator features:

- Upholds a constant sub pressure after a local extract point and fume hood cabinet in the extract air duct (please see the function example, page 4).
- Maintains balance between supply and extract air flows.
- Can be set for a fixed balance offset.
- Can secure minimum airflow into a zone and maximum airflow from a zone.

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- Allows connection of a detector for either room temperature or a combined temperature and CO₂-detector.
- Possibility of zone shutdown.
- Can be mounted in room, corridor, shaft or engine/fan room.

Functionality – description

The Uranos Zone Regulator operates on a unique principle, where a consistent distinction is made between large and small variations. When major changes are needed, the system adjusts quickly, while calmer conditions are regulated more gently. This provides high stability in the system, no matter how many fume hood cabinets, extraction points etc. are worked on simultaneously.

The Uranos Zone Regulator makes it possible to:

- ***Maintain a constant underpressure in the joint extract air duct for fume hood cabinets and extraction points***
This enables simple adaptation, high flexibility and low sound levels in the ventilation system.
- ***Sustain balance between extract and supply air in the zone***
This can be done as either a percentage of or a fixed offset of air volume, enabling control of both air direction and airflow in a room. With specially developed dampers it is possible to achieve continuous adaptation from 0-100% in the room.
- ***Limit air volumes in the zone to a constant max flow***
If max. air flow is exceeded for an extended period, an alarm can be triggered in either the room or optionally to a BMS. This function helps maintain the air balance in the room.
- ***Secure that a constant min. air flow (air exchange) is maintained in the zone***
If the required airflow is not maintained, a damper connected to an extract air bypass (e.g. a ceiling diffuser) is enabled. In this way, the air is extracted from the room via the fume hood cabinets and extraction points.
- ***Control room temperature***
If the temperature exceeds the setpoint value, a damper connected to an extract air bypass (e.g. a ceiling diffuser, see fig. 201:2/301:4), is enabled. However, this function is independent of the fume hood cabinets and extraction points. As the air balance of the room is maintained, an increased volume of extracted air results in an increased volume of supply air.
- ***Lower airflows when premises are unoccupied or not in use***
When no people are present in the premises, the airflow in the premises are lowered. This reduces energy consumption, which allows for savings to be achieved.

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Components – functionality and interaction

The Uranos Zone Regulator can be connected to several components and regulate multiple processes.

The following illustrations exemplify typical operating principles for control of two different zones with:

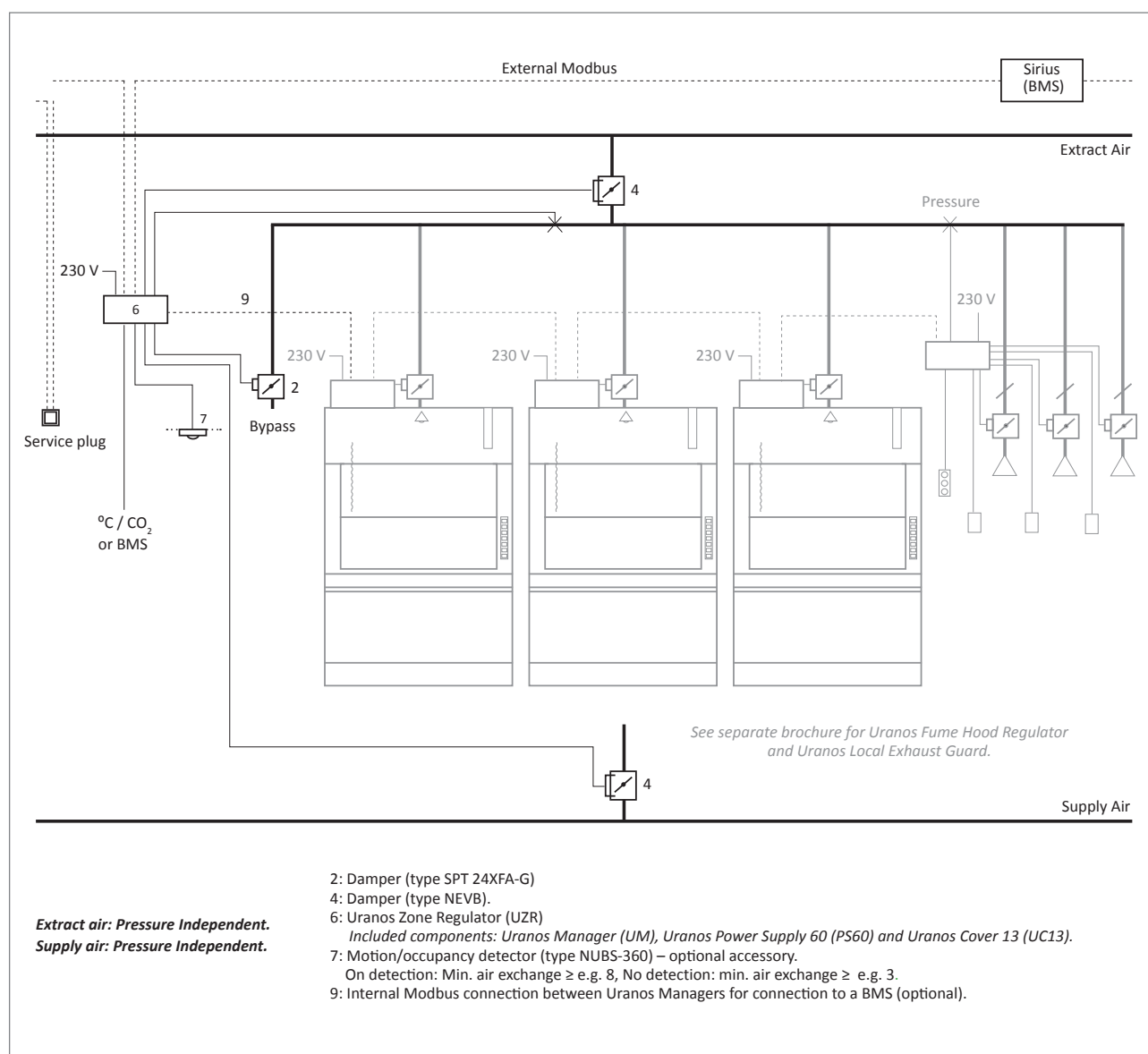
- Joint duct for extract air and joint duct for supply air.
- One or multiple ducts for both supply and extract air.

For both operating principles, Modbus RTU communication is indicated as a dashed line, which includes both external and internal Modbus connection.

External Modbus: Used for superior communication with the zone controller, or may also be connected to a BMS.

Internal Modbus: Used for internal communication between system components in a room or zone.

Control of a zone with a joint duct for extract air and a joint duct for supply air



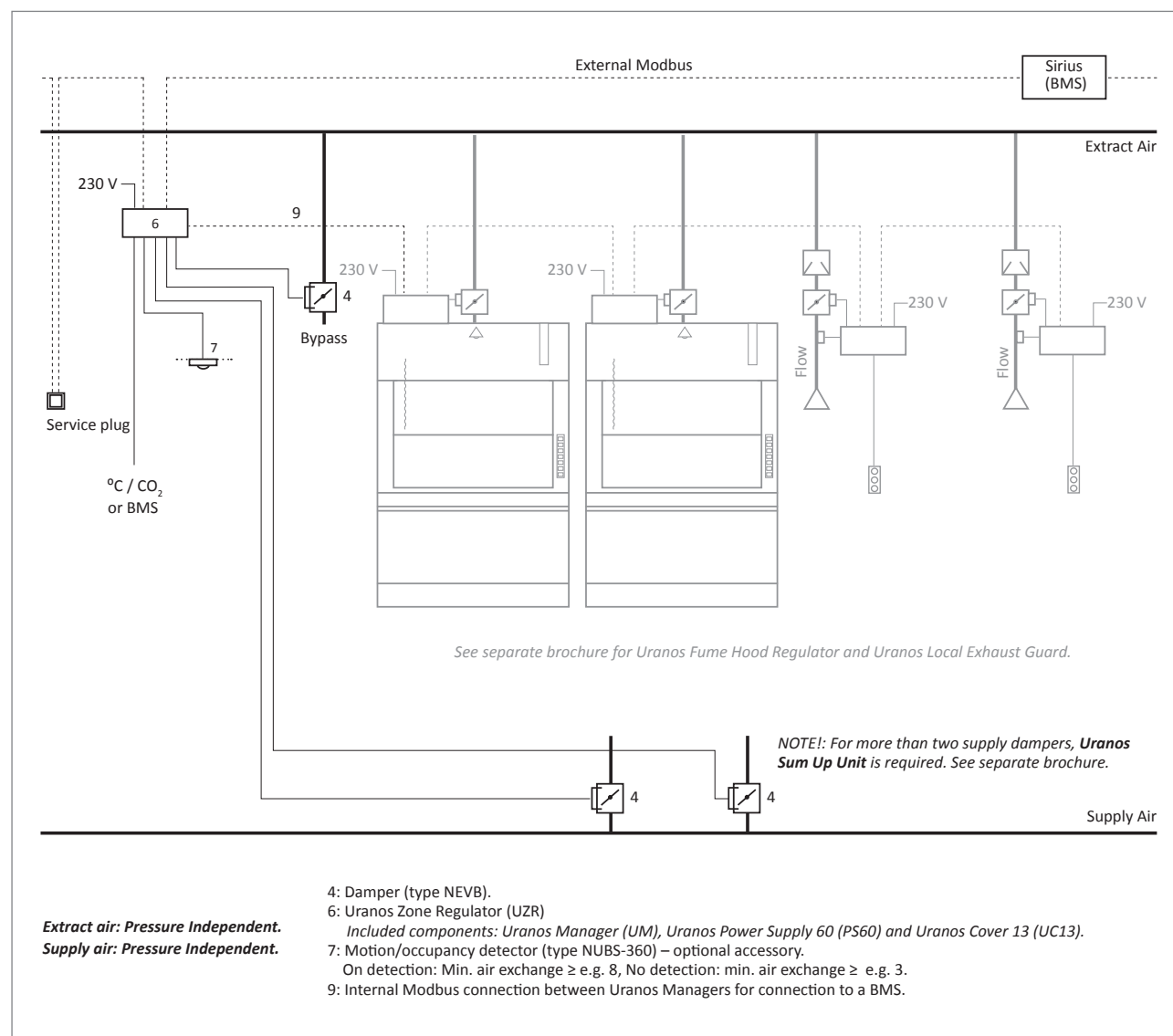
Function principle for Uranos Zone Regulator, no. 201.

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Control of a zone with one or more ducts for supply and extract air



Function principle for Uranos Zone Regulator, no. 301.

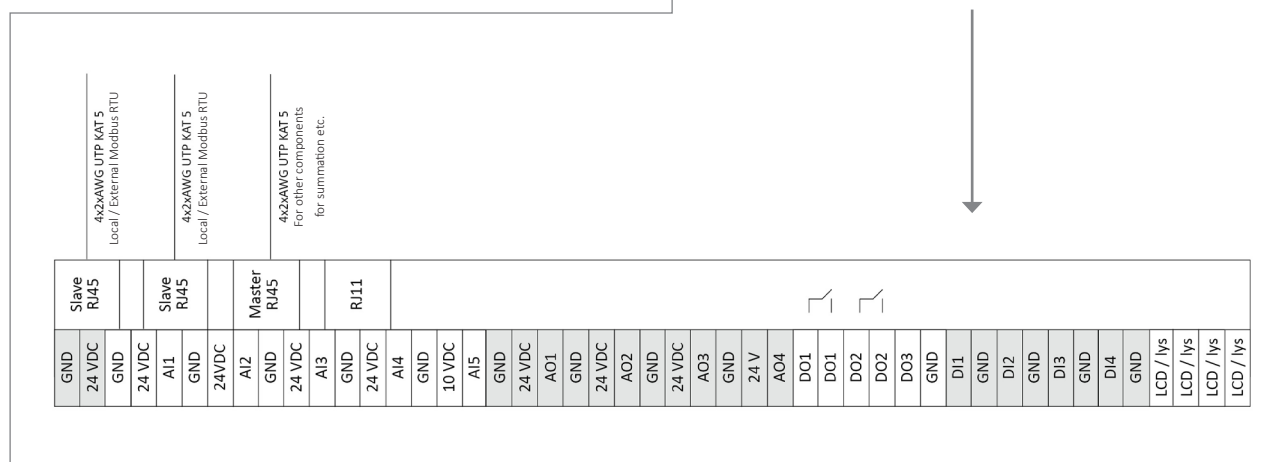
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Wiring connections

All components of the fume hood controller are connected to the basic module, Uranos Manager. The illustration shows the wiring layout for the basic module.

For more information on connecting components, please refer to separate document, with wiring diagrams for the zone controller.



Connection layout for Uranos Manager.

Dimensions

The following dimensions apply for the overall components which can be included in the zone controller solution.

URANOS COVER 13	Casing/cover box for basic module with integrated power supply	250 x 250 x 103 mm (HxWxD)
URANOS COVER 10	Casing/cover box for the basic module	180 x 218 x 82 mm (HxWxD)
POWER SUPPLY 60	Power supply	93 x 78 x 56 mm (HxWxD)
URANOS MANAGER	Basic module / control unit	81 x 156 x 58 mm (HxWxD)
URANOS MANAGER PRESSURE TRANSMITTER	Basic module / control unit incl. pressure transmitter	81 x 156 x 58 mm (HxWxD)
NUBS-360	Motion/occupancy detector	80 x 30,6 mm (ØxH)

In addition, there are separate technical sheets on all components, in which the exact specifications are described.

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Technical specifications

Supply voltage	24VDC +/- 10%.
Power consumption	
Type	0,1A.
Max.	1,6A.
Analog Input	
AI1	0 - 10VDC, Ri > 100kΩ.
AI2	0 - 10VDC, Ri > 100kΩ.
AI3	0 - 10VDC, Ri > 100kΩ.
AI4	0 - 10VDC, Ri > 100kΩ.
AI5	0 - 10VDC, Ri > 100kΩ.
Vout AI5	10 VDC, max. 5mA.
Analog Output	
AO1	0 - 10VDC, max. 5mA.
AO2	0 - 10VDC, max. 5mA.
AO3	0 - 10VDC, max. 5mA.
AO4	0 - 10VDC, max. 5mA, galvanically separated.
Digital Input	
DI1	15V disconnected (pull up), 2mA connected.
DI2	15V disconnected (pull up), 2mA connected.
DI3	15V disconnected (pull up), 2mA connected.
DI4	15V disconnected (pull up), 2mA connected.
Digital Output	
DO1	Relay NC, 30 VDC, 0,2A.
DO2	Relay (wolfram) NO, 230VAC, 2A.
DO3	"Open Collector" 24VDC on/off, max. 100mA.

Panel RS485	
Protocol	Modbus RTU.
A	Data+.
B	Data-.
Baud rate	19,2k.
Parity	Even.
Data bits	8 bit.
Stop bits	1.
Power out	15VDC (9VDC at backup), max. 0,1mA.
Master RS485	
Protocol	Modbus RTU.
A	Data+.
B	Data-.
Baud rate	115,2k / 19,2K / 9,6k.
Parity	Non / Even / Odd.
Data bits	8 bit.
Stop bits	1 or 2 bit (always 1 bit on Even / Odd parity).
Power out	24VDC, max. 1,2A.
Slave RS485	
Protocol	Modbus RTU.
A	Data+.
B	Data-.
Baud rate	115,2k / 19,2k / 9,6k.
Parity	Non / Even / Odd.
Data bits	8 bit.
Stop bits	1 or 2 bit (always 1 bit on Even / Odd parity).
Request Time (*)	< 20mS.
Poll Time (**)	> 1mS.

(*) = **Request Time**, in this case, is defined as the time from the last byte of a received **Request**, to the start of the first byte of the corresponding **Response**.

(**) = **Poll Time**, in this case, is defined as the time from a **Response** received, until next **Request** is dispatched.

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Order specification

Uranos Zone Regulator - Zone Controller

Type UZR (specified at order placement)

UZR consists of the following products		Type Designation
<i>Uranos Manager</i>	Basic module / control unit	UM
<i>Uranos Cover 10</i>	Casing for Uranos basic module	UC10
<i>Uranos Cover Fill</i>	Complementary filler for module casing UC10	UCF

Uranos Zone Regulator - Zone regulator with integrated power supply

Type UZR-PS60 (specified at order placement)

UZR-PS60 consists of the following products		Type Designation
<i>Uranos Manager</i>	Basic module / control unit	UM
<i>Power Supply 60</i>	Power supply	PS60
<i>Uranos Cover 13</i>	Casing for Uranos basic module with power supply	UC13

Uranos Zone Regulator – Zone controller incl. pressure transmitter and integrated power supply

Type UZR-PT-PS60 (specified at order placement)

UZR-PT-PS60 consists of the following products		Type Designation
<i>Uranos Manager Pressure Transmitter</i>	Basic module / control unit incl. pressure transmitter	UM-PT
<i>Power Supply 60</i>	Power supply	PS60
<i>Uranos Cover 13</i>	Casing for Uranos basic module with power supply	UC13

Uranos Zone Regulator – Zone controller incl. pressure transmitter

Type UZR-PT (specified at order placement)

UZR-PT consists of the following products		Type Designation
<i>Uranos Manager Pressure Transmitter</i>	Basic module / control unit incl. pressure transmitter	UM-PT
<i>Uranos Cover 10</i>	Casing for Uranos basic module	UC10
<i>Uranos Cover Fill</i>	Complementary filler for module casing UC10	UCF

Accessories

Products		Type Designation (specified at order placement)
<i>NUBS-360</i>	Ceiling mounted movement/occupancy detector	NUBS-360
<i>Warning LED</i>	Flashing alarm light for indoor installation	WL