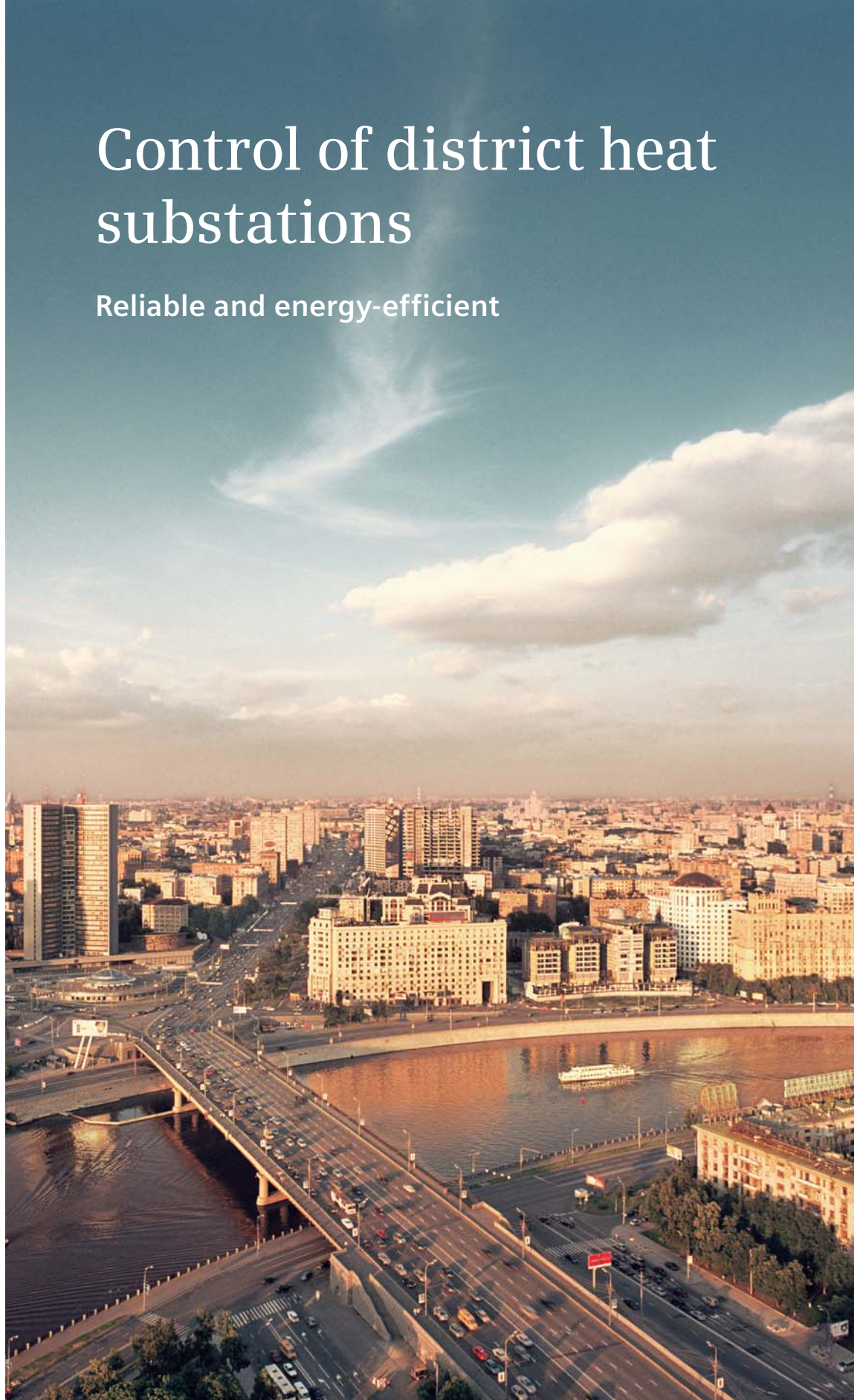


Control of district heat substations

Reliable and energy-efficient



Answers for infrastructure.

SIEMENS





District heating control: for trouble-free and energy- efficient network operation

Thanks to efficient power generation, combined heat and power and the recovery of residual and waste heat, district heating plants are an environment-friendly alternative for the separate generation of electrical power and heat. This way, emissions of thousands of tons of CO₂ per year can be prevented.

The individual district heat substations are of key importance when it comes to ensuring optimum operation of a district heating plant. They are the connecting link between the district heat utility and the end user. Here, the district heating controllers and systems from Siemens provide the conditions for trouble-free and energy-efficient network operation. If required, the controllers can be connected to a standard communication system (M-bus) to facilitate remote monitoring.

■ **Comprehensive range of district heating controllers and systems**

Siemens range of district heating controllers and systems covers the entire area of application: From power generation and distribution to commercial and residential usage, from controllers for standard applications to communicating and freely programmable automation systems for complex building services plants. Reliability, user-friendliness and functionality are the key features of all controllers supplied by Siemens, thus ensuring trouble-free and energy-efficient operation of the entire network. Matching control valves, actuators and sensors complement the product range.

■ **Energy efficiency based on innovative technologies**

Thanks to innovative technologies and integrated energy-saving functions, the district heating controllers from Siemens enhance the economics and energy efficiency of small and large district heating schemes. Functions such as DRT limitation (differential of return temperatures), patented by Siemens, load management or eco function have a favorable effect on heat transfer capacity, pumping power, heat losses and efficiency in the case of combined heat and power generation. The transportation of unused heat is prevented, and the energy costs of your district heating plant are considerably reduced.

■ **Protection of investments thanks to open communication standards**

When it comes to development and production, Siemens places great emphasis on future-oriented products and systems. Open communication standards and standardized bus systems facilitate

straightforward and secure integration into superposed system worlds or third-party systems. Thanks to the modular concept and backward-compatible communication, plants can be extended at any time and matched to individual customer needs, thus protecting your investments in the long term.

■ **Quick commissioning and ease of operation**

District heating controllers from Siemens excel in straightforward operation and integrated, proven standard applications. They save you time and cost in terms of installation. What's more, smooth operation is guaranteed and unnecessary service visits need not be made. Remote monitoring and service tools simplify operation.

■ **Decades of experience and high-quality standards**

HVAC plant control has been one of our challenges for more than 70 years. In-depth application knowledge from practical experience and know-how gained from extensive research work form the basis for incremental product development. We place the most demanding requirements on quality management and subject our products to stringent tests. The controllers and their functions are thoroughly tested in our own HVAC laboratory. This guarantees the highest possible quality levels, thus enabling us to become your competent partner.

Highlights

- Comprehensive range of district heating controllers and systems
- Energy savings thanks to innovative technologies
- Protection of investments thanks to open communication standards
- Quick commissioning and ease of operation
- Decades of experience

Energy distribution



Heating/Substation



Control in the commercial and residential sectors





RVD range – RVD240



Synco 700 – RMH760B

District heating control for every application area

■ RVD range of controllers for standard district heating plants

The district heating controllers of the RVD range excel in functionality and straightforward and uniform operation.

The affordably priced RVD110 and RVD130 are suited for basic substations where communication is not required. Preconfigured standard applications simplify commissioning.

The more sophisticated and communicating RVD230 and RVD240 controllers are designed for a broad field of use, including plants with several heating circuits and DHW heating including storage tank charging. A communication interface is available, enabling the controllers to be integrated into a system with extensive control tasks: From district heat substations to heating circuit control and

ventilation plant. The M-bus facilitates integration into an operator station to monitor the controllers and to read the connected heat meters.

■ Synco™ 700 – the versatile and modular range of HVAC controllers

Synco 700 is a control system of modular design covering all types of HVAC application. Synco RMH760B is designed for district heating control and offers more than 40 other integrated proven standard applications. Thanks to their straightforward and efficient operation, the Synco controllers excel in high levels of user and service friendliness. Owing to the integrated and proven standard applications, programming is no longer required.

Communication takes place via the open KNX standard bus.

■ SAPHIR – controller platform for OEMs

SAPHIR is the controller platform with a software toolset for our OEMs and covers all areas of application. The complete range of programmable controllers offers a high level of flexibility for complex customized plants and can be optimally tailored to your individual needs. Open communication is possible with all standard protocols and a Web server for operation by means of an Internet browser.

■ DESIGO™ PX – the scalable automation system for maximum flexibility

DESIGO PX is a family of freely programmable automation stations offering maximum flexibility. They are designed for optimum control and monitoring of building services plants. Extensive system functions, such as alarm report-



DESIGO PX automation system – PXC36



Actuating devices – magnetic valve MF461H25

ing, time programs and trend data storage satisfy all types of requirements. The automation stations work autonomously and decentrally and are available in two product lines. Communication takes place via the open BACnet™ protocol on LonTalk®, Ethernet/IP, or via modem.

DESIGO PX OPEN is designed especially for universal and open communication, supporting easy and favorably priced integration of third-party systems and devices. The DESIGO INSIGHT management station allows for convenient multiuser operation throughout the system with the help of which all building systems can be controlled and monitored from any of the stations.

The DESIGO I/O modules form the interfaces to all devices on the field level, to actuators and sensors.

■ **Actuating devices with the highest precision and speed**

Actuating devices from Siemens complement the range of products for district heating applications. The range includes control valves, actuators and sensors for applications on the primary and secondary side of substations for both small and large district heating systems.

Magnetic valves featuring high-control accuracy and speed of response are available for crucial DHW applications.

Highlights

- RVD line of controllers for standard district heating plants
- Synco 700 – range of modular HVAC controllers for flexible use
- SAPHIR – the controller platform for OEMs
- DESIGO PX – the scalable automation system for maximum flexibility
- Actuating devices featuring high-control accuracy and speed of response

Management station DESIGO INSIGHT



Overview of technical data

| | Standard district heating plants | | Plants with combined heating, ventilation and air conditioning control | Complex building services plant | |
|--|----------------------------------|---------------------------|--|--|--------|
| | Autonomous controllers | Communicating controllers | Configurable and communicating controllers | Freely programmable automation systems | |
| | RVD110 RVD130 | RVD230 RVD240 | Synco RMH760B | SAPHIR | DESIGO |

Plant functions

Precontrol

| | | | | | |
|-------------------------------|---|---|---|---|---|
| Flow temperature control | ■ | ■ | ■ | ■ | ■ |
| Return temperature limitation | ■ | ■ | ■ | ■ | ■ |
| Limitation of hydraulic creep | | ■ | | ■ | ■ |
| DRT limitation | ■ | ■ | | ■ | ■ |

Heating circuit functions

| | | | | | |
|-------------------------------|---|---|---|---|---|
| Mixing heating circuits | ■ | ■ | ■ | ■ | ■ |
| Pump heating circuits | ■ | ■ | ■ | ■ | ■ |
| Return temperature limitation | ■ | ■ | ■ | ■ | ■ |

DHW heating

| | | | | | |
|--|---|---|---|---|---|
| Pump charging | ■ | ■ | ■ | ■ | ■ |
| Flow system with control of heat exchanger | ■ | ■ | ■ | ■ | ■ |
| Storage tank with precontrol | | ■ | ■ | ■ | ■ |
| Storage tank charging system | ■ | ■ | ■ | ■ | ■ |
| Circulating pump via time program | ■ | ■ | ■ | ■ | ■ |
| Legionella function | ■ | ■ | ■ | ■ | ■ |

Operation and communication

Operation

| | | | | | |
|---|---|---|---|---|---|
| Analog room temperature setpoints | ■ | ■ | ■ | ■ | ■ |
| Heating curve | ■ | ■ | ■ | ■ | ■ |
| Digital parameterization, setpoint/actual value | ■ | ■ | ■ | ■ | ■ |
| Operator unit | ■ | ■ | ■ | ■ | ■ |
| Room operator units (analog/digital) | ■ | ■ | ■ | ■ | ■ |
| Year clock | ■ | ■ | ■ | ■ | ■ |

Communication

| | | | | | |
|---|--|-------|-------|-------------|-------------|
| Communication within the controller network | | LPB | KNX | 1) | BACnet |
| M-bus | | ■ | | ■ | ■ |
| Communication with heat meters | | Pulse | Pulse | M-bus/pulse | M-bus/pulse |
| Management station | | ■ | ■ | ■ | ■ |
| Web operation/protocol | | ■ | ■ | ■ | ■ |
| Telephony, fax function (F) and SMS (S) | | ■ | ■ | ■ | ■ |

1) ModBus, KNX, LON, OPC, BACnet

Energy efficiency thanks to patented DRT limitation

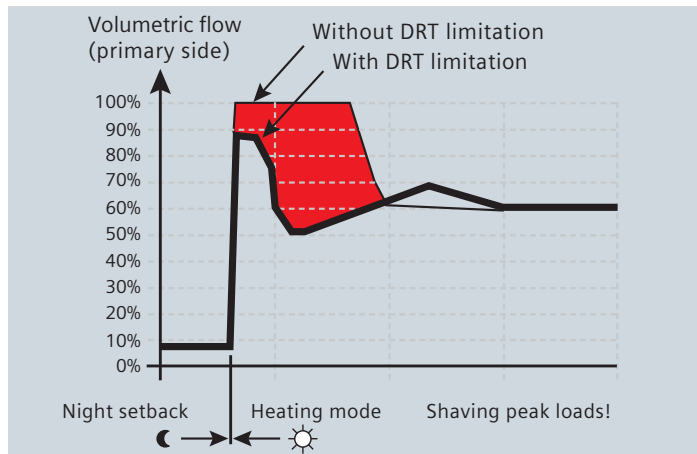
The return temperature is an important criterion for ensuring economical operation of district heating networks. Heat transfer capacity, pumping power, heat losses and efficiency depend on it. To ensure that the return temperature in the network is kept as low as possible,

the district heating controllers supplied by Siemens acquire the difference between the primary and the secondary return temperature and limit it. Peak loads are shaved, and oversized plants are only supplied with the volumetric flow they can handle. This prevents

unused heat from being carried through the pipework and energy costs are reduced.

The DRT function is an important prerequisite for economical and ecological operation of district heating networks, optimization of plant and thus shorter investment payback times.

This patented function is a milestone in control technology and offers excellent opportunities in energy management.



Every morning during the heating up phase, the volumetric flow on the primary side is throttled in a way that optimum usage of heat supplies is ensured.

Welcome to the world of innovative thinking

■ Innovation

Siemens invests a great deal in both manpower and research and development. This results in a steady stream of new insights, technologies and inventions that enable us to improve the reliability of our products and systems, ensuring the securest products and making our systems even more simple and convenient to operate.

■ Reliability

With a history of over hundred years, if you need an established, reliable partner, you are in the very best of hands with Siemens. System expansions and upgrades can be continuously made over a period of years, which ensures your investment for the future.

■ Comfort

Siemens products and solutions ensure comfort in your working and living environments. Today, tomorrow and for decades to come. That's why numerous customers around the world rely on Siemens.

■ Energy and ecological efficiency

Siemens helps save energy, protect our resources and reduce harmful emissions.



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The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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