

SIEMENS

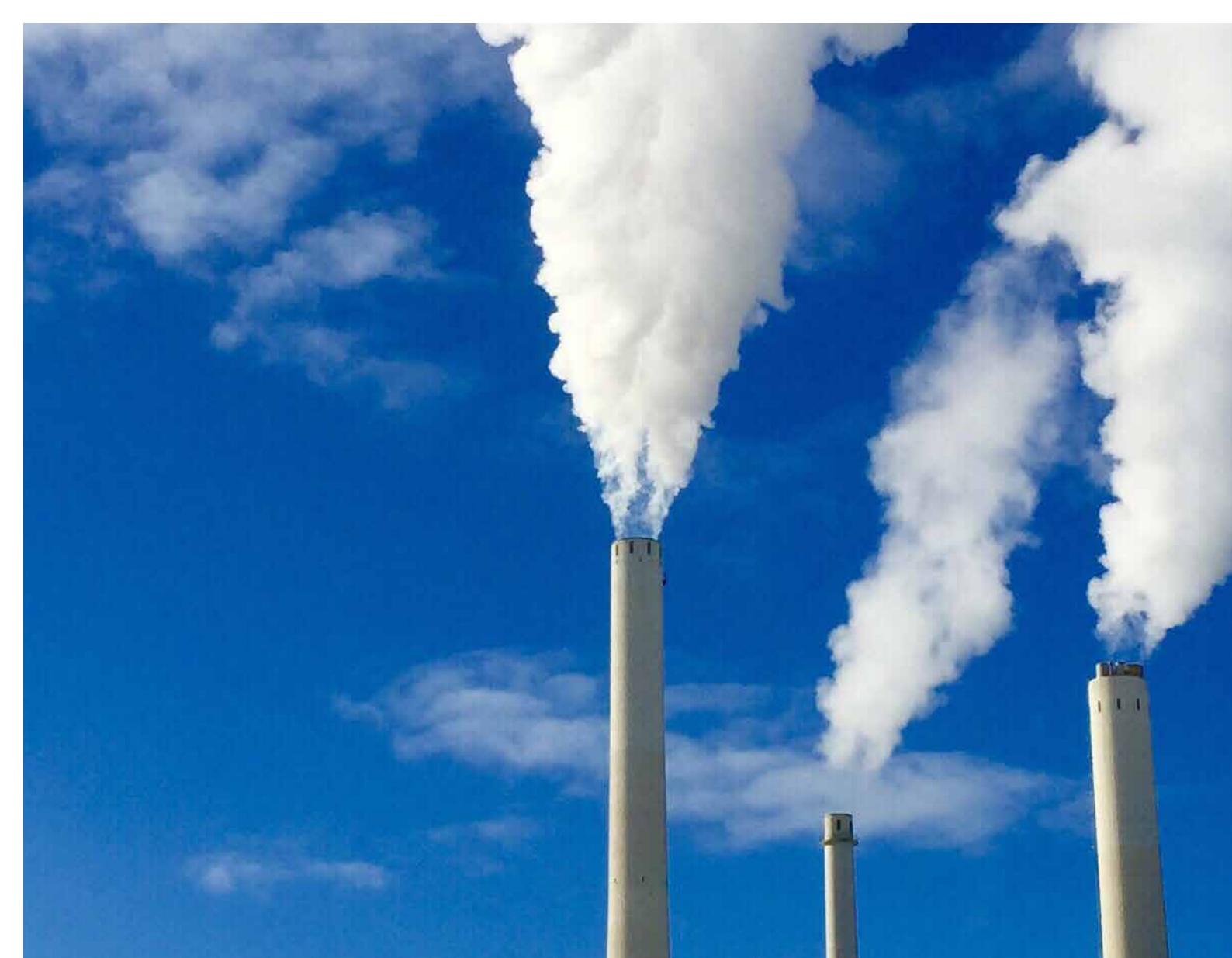
Ingenuity for life

Innovative controllers for district heating

Control Products & Systems OEM



siemens.com/buildingtechnologies-oem



Siemens control technology for intelligent district heating



Decades of experience and close cooperation with renowned customers in the field of district heating substations make Siemens one of the leading suppliers of district heating control systems. Based on this know-how and competence, we have further extended our control systems by adding innovative solutions. From simple solar control systems to multifunctional controllers for district heating substations, Siemens offers proven, extendable systems of modular design that meet almost any requirements. Our control technology will enable you to implement your ideas.

The new generation of district heating control

Energy efficiency

The need for climate protection leads to long-term changes in the energy sector. The political decisions regarding the energy turnaround are already being made, but many questions are still unanswered when it comes to implementation. Clearly, district heating will play a major role in this industrial sector. From today's point of view, the investment decisions to be made by the district heating companies under these conditions must be economical and should be planned such that future developments can be accommodated. Networking and intelligent control technology are two of the keys for meeting these challenges that affect all of us.

New way of thinking as a challenge

In view of these developments, Siemens introduces the new district heating controller family Climatix DH, complementing the proven RVD product portfolio. The new innovative products satisfy present and future requirements. Climatix DH enables you to implement cost-optimized solutions while giving consideration to future needs.

Communication capability

When developing the controllers, special emphasis was placed on communication capability to ensure all networking requirements will be met.

This way, the information needs of district heating customers, building owners and district heating companies can be satisfied at any time. You can use the communication network of the district heating company or that of an external provider and, at the same time, integrate it into a building management system. The Climatix DH controllers with their modular design offer all options for the future, even if present usage does not yet call for communication.

Modernization

The extensive choice of sensors and hydraulic schemes resulting from the function group concept make the Climatix DH controllers specifically suited for retrofit projects or for use in existing networks. This enables the district heating company to pursue a step-by-step strategy to upgrade existing networks with advanced control and communication technology.

Holistic offering

Optimum results can only be achieved with well-engineered solutions. Siemens offers a comprehensive portfolio of optimized field devices. As a leading supplier of valves and actuators for building systems, we offer easy-to-install and reliable components. The valves' precise characteristics support the control performance of the district heating substation.

Highlights

- Competence and innovation by Siemens
- Cost-optimized solutions
- Information available at any time
- Stepwise upgrading, if required
- Comprehensive offering



The need for climate protection leads to long-term changes in the entire energy sector. Siemens offers solutions based on an extensive product portfolio.



Product-portfolios



Valves and actuators



Differential pressure control valve



Touchpanel



User interface



Communication module



Temperature sensor



Controller



Pressure sensor



Ready for intelligent district heating networks while securing existing investments.

Proven and innovative – RVD and Climatix DH controllers

Energy efficiency

The communication capability of Siemens controllers allows the exchange of energy demand and energy production data and makes possible intelligent and highly efficient district heating networks. A number of special control algorithms, such as algorithms required for the effect of wind and solar radiation, increase the energy efficiency of the individual building. For more detailed information about our controllers, please refer to the relevant documentation.

Investment protection

The RVD controller family has been further developed and offers proven solutions for new and existing plants. Climatix DH integrates these solutions in a new concept and transfers them to the next generation of district heating controllers. Communication capability, extendability, ease of operation, and flexible use are just some of the benefits the new products offer. Thus, backward compatibility is ensured in several ways.

Future investments can be planned

The modular design of the Climatix DH controllers makes it possible to also use communication modules later on when, at the time the initial investment is made, it is not yet clear whether communication or what type of communication will be required. Using extra input/output modules, plants can be extended at any time. What's more, thanks to open sensor selection and a choice of output signals, Climatix DH controllers can also be used to upgrade existing plants. If required, up-grading can be accomplished in several steps, if a controller shall be replaced, for instance.

Ease of operation

Intuitive operating concepts are used, depending on the controller family – matched to the respective group of users. The RVD models excel as comfort temperature controllers, allowing users to choose their comfort level with no need for reading instructions. Climatix DH goes a step further and features cleartext display including userfriendly, menu-driven operation.

Highlights

- Energy efficiency thanks to special control algorithms and networking
- Advanced communication capability
- Future-proof investments
- User-friendly operations
- Data recording according to trends and events



Climatix DH controllers –
the innovation in the field
of district heating.

POL638.00/DH1
POL638.70/DH1 with display

Service and efficiency check

The new Climatix DH controllers offer integrated data archives. The acquired data allow users to check if the desired efficiency of the plant will be achieved. Also, the available data simplify fault tracing.

Communication

All Siemens district heating controllers satisfy communication requirements, matched to the respective field of use. All of them make use of open standard protocols. This enables customers to exchange data with third-party devices and ensures communication capability in the future. Climatix DH offers several open protocols.

Range of valves and actuators

The portfolio of valves and actuators is matched to the requirements of district heating and cooling energy. You benefit from straightforward and secure installation, for example, and from in-depth experience of the leading supplier.

Broad choice of applications

The RVD family with its choice of applications satisfies most requirements of the district heating companies. More demanding requirements in terms of the number and type of heating circuits plus domestic hot water heating are met by Climatix DH

with its novel function group concept. The basic idea of this innovation is that – with the majority of plants – all heating circuits operate the same way, only the number and hydraulic combination of the heating circuits, primary controllers, and domestic hot water circuits vary. The function groups employ the proven control algorithms developed by Siemens.

Meeting customer needs efficiently

Thanks to a high level of flexibility, Climatix DH enables you to satisfy your customers' needs with regard to sensors, output signals for valves and actuators, plus straightforward integration into building management systems.

Trending

Using the Scope software, temperatures and related valve positioning signals can be plotted on site. The behavior of the controlled system can be analyzed and optimum control parameters can be determined. Upon change of the parameters, the success of the readjustment can be checked.



Using its built-in communication interfaces, the district heating controller is capable of controlling and monitoring from remote locations both simple and complex plants with a large number of sensors, actuators and pumps.



Benefits for the OEM – smart communication

Broad choice of applications

Thanks to the function groups and intelligent menu-driven operation, district heating substations with up to 4 heating circuits, 3 primary controllers and 2 domestic hot water circuits can be implemented with one Climatix DH controller. The function groups can be easily combined depending on the requirements and offer an extensive choice of applications. This requires no special tools and no programming knowledge. The OEM can thus benefit from a high level of flexibility with no need for using freely programmable controllers. Once the parameter lists are created, they can simply be copied from one controller to another.

Proven control algorithms

The function groups are based on proven control algorithms developed by Siemens. So there is no need to develop and test comparable, expensive self-programmed solutions, thus reducing development costs.

Cleartext display

Access to the application is straightforward and matched to user needs. Menu text can be selected in the required national language. New languages can be added to the standard languages, if needed. Naturally,

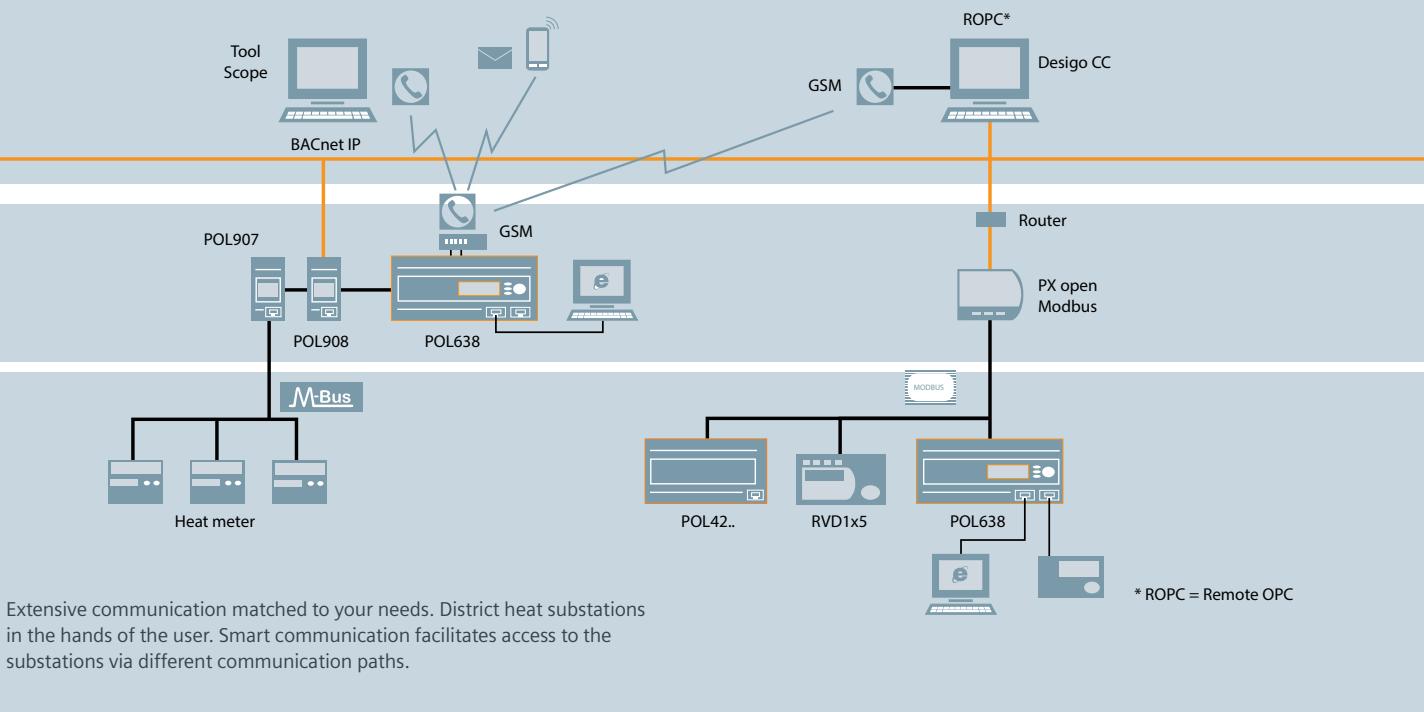
special fonts, such as Russian and Chinese, are supported so that new markets can be penetrated. If desired, Climatix DH can be supplied with matching touchpanels.

Tools for the production line

Software tools, such as Scope, are available for setting parameters on highly automated production lines. Special functions (e.g. cabling test) make it possible to conduct function tests at the end of the production line. Extension modules enable the OEM to develop and offer substations of modular design. In that case, the Climatix DH controller is installed in the basic module, for instance, and the other group subassemblies will merely be equipped with a simple extension module. This way, the control can already be installed and wired on the production line. Hence, the only work to be done on site is to plug the bus cable for the module connections. This means that the cost of control depends on the system's size.



Intelligent devices support the production process.



Communication getting more demanding

Our society is getting used to more and more sophisticated communication via electronic media. At the same time, the requirements placed on district heating increase. They reach from adjustable comfort to transparent presentation of energy usage to networked heat production and fault status messages. Integration in building management systems of larger buildings is now state of the art and indispensable. Future developments of supply networks (smart grid) may even place more exacting requirements on district heating systems and have the potential to generate new business models. Today, the impact of such developments is still unclear, but technology that is open for different future scenarios offers significant advantages. Naturally, all Siemens district heating controllers satisfy communication requirements, matched to the relevant field of use.

Open protocols

Special emphasis has been placed on communication capability, aimed at meeting the requirements of networking. This means that the Climatix DH controllers can make use of an existing communication network, or of that to be installed by the district heat company, or of that of an external provider and, at the same time, integrate the network into a building management

and control system. All protocols used are open standard protocols, such as BACnet, Modbus, M-bus and TCP/IP. These enable customers to exchange data with third-party devices and ensure future communication capability.

Web operation

The Web makes its appearance in the field of district heat. The Climatix DH controllers have a connection facility for Ethernet. With the help of the HMI@Web function, you can operate the Climatix DH controller from your Internet browser, just like using the operating unit. What's more, the AWM module allows you to produce plant graphs and trend recordings.

Modularity

Due to their modular design, the Climatix DH controllers offer all options for future use, even if communication capability is not yet required at the time of installation. Climatix DH with its communication modules allows you to choose from different open protocols. This way, you can use BACnet to make integrations into building management and control systems like DESIGO Insight from Siemens, use the M-bus to read the heat meters, or use the Web to access the plant from a remote location. Retrofitting is possible at any time.

Highlights

- Extensive choice of applications with no need for programming
- Efficiency thanks to proven control algorithms and networking
- User-friendly and easy-to-understand operation
- Advanced communication capability
- Future-proof investments thanks to modular design



Special functions for more efficiency

Efficiency check

In accordance with contractual connection conditions, return temperature, volume flow or load limits can be securely stored in the controller. Also, pressure and temperatures in the district heating substation can be monitored and recorded. This enables the district heating company to ensure secure operation and to detect abnormal changes at an early stage. This way, increased costs for customers and undesired effects on the district heating network can be prevented.

Special functions

Functions, such as floor curing in new buildings and limited temperature increase to prevent cracking noise, support both the heat supplier and user while giving consideration to special building characteristics. If required, it is also possible to suppress night setback when a selectable low outside temperature is reached.

Avoiding downtimes

When the plant is switched off for longer periods of time, valves and pumps can be activated for a few minutes to prevent seizing. Heating system pressure can be automatically

maintained, if required. The ECO function can be used to reduce the number of switching cycles.

Ready for intelligent district heating networks while securing existing investments.

Load management

With the help of release and locking signals, the available amount of energy can be optimally distributed in the network. The heat request signals delivered by the consumers allow optimum use of the heat sources.

Optimization

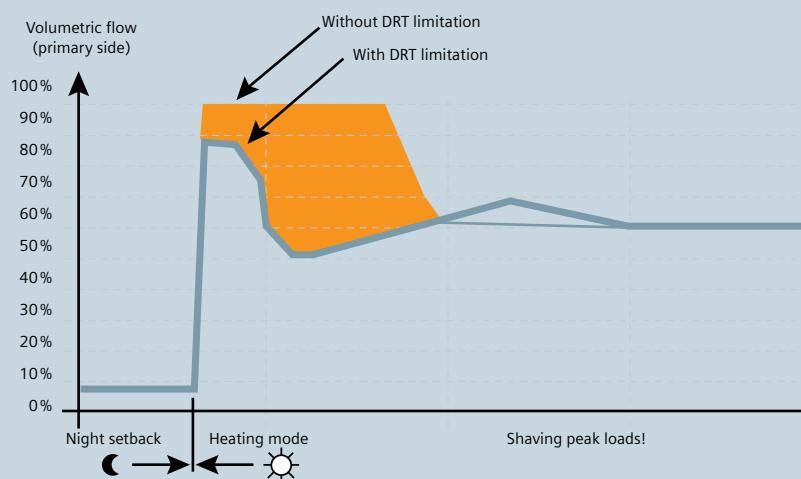
Optimum start/stop control provides heat at the right time and reduces it in due time. If desired, the controller gives consideration to external influences, such as solar radiation and wind effect. This enhances room comfort and increases energy efficiency.

Solar domestic hot water heating

In heating networks operating only in the winter, solar domestic hot water heating represents an efficient alternative in the summer. This way, operating costs are reduced.

Optimum usage of heat

The DRT function makes use of the difference of return temperatures between the primary and secondary side. Maximum limitation of these temperatures ensures that load peaks are prevented, especially at the end of night setback. Fewer load peaks lead to lower volumetric flow, smaller pipe diameters and downsized heat sources.



			Controllers					
			RVD125..	RVD145..	RVD255..	RVD265..	POL638.00/DH..	POL638.70/DH..
Applications		Pump or mixing heating circuits	1	1	1	2	4	4
		Domestic hot water heating	1	1	1	1	2	2
		Precontrol			1		3	3
		Solar		*	*	*	*	*
		Plant diagrams	3	8	28	14	Flexible	Flexible
		Automatic maintenance of pressure		*	*	*	*	*
Special functions		Suppression of hydraulic creep		*	*	*	*	*
		Solar or wind compensation					*	*
		Efficiency check through data recording					*	*
		Selection of sensors					*	*
		Load management			*	*	*	*
		Return temperature	*	*	*	*	*	*
Limitations		Difference of return temperatures	*	*	*	*	*	*
		Volume/output together with heat meter		*	*	*	*	*
		Modbus RTU interface	RTU	RTU			RTU/IP	RTU/IP
		M-Bus			Slave	Slave	Master	Master
		Modem RS232 interface					*	*
		Ethernet TCP/IP interface (WEB HMI)					*	*
Communication		WEB module			*	*	*	*
		BACnet IP module					*	*
		LON module					*	*
	QAW70-A und -B		Display, operating mode selector Rotary knob for room temperature readjustments Economy button	1	1	1	1...2	
	POL822.70/STD		Settings of clock, heating program, and temperature setpoints, info button Room temperature readjustments, economy button				1...4*	1...4*
	POL8T1.80		Touch panel 12" (IP65), Communication over Modbus protocol, Ethernet and RS485 serial ports Fully programmable graphic user interface				1	1
Operating units	POL8T1.70		Touch panel 7" (IP65), Communication over Modbus protocol, Ethernet and RS485 serial ports Fully programmable graphic user interface				1	1
	POL8T1.40		Touch panel 4" (IP65), Communication over Modbus protocol, Ethernet and RS485 serial ports Fully programmable graphic user interface				1	1
	POL871.71/STD POL871.72/STD		Cleartext operating unit, 8 lines Backlit display, blue Degree of protection IP65				1	1
	POL895.51/STD		Cleartext display, 8 lines Backlit display, blue or white Select-and-push knob for ease of operation				1	1
	QAC.. QAD.. QAE..		Outside, strap-on and immersion temperature sensors LG-Ni1000, Ni1000, Pt1000, Pt500, NTC 575, NTC 10k, KTC, DC 0...10 V or DC 4...20 mA	QAC31.. QAD21.. QAE26.. QAZ21..	QAC31.. QAD21.. QAE26.. QAZ21..	QAC31.. QAD21.. QAE26.. QAZ21..	QAC31.. QAD21.. QAE26.. QAZ21..	QAC31.. QAD21.. QAE26.. QAZ21..
	QBE9001..		Pressure sensors, DC 0...10 V signal Highly temperature-resistant		2	2	2	13
Sensors	QLS60		Acquisition of solar radiation Fast and accurate DC 0...10 V or DC 4...20 mA signal				1	1

Key:

*Version 2.00 or higher



Energy-efficient

Flexible combinations – ideal for the entire field of district heating

			Valves				
			VVP459..	VVG549..	VVG41..	VVF43..	VVF53..
Hydraulic parameter	Type of valve						
	Rated pressure	PN 16	PN 25	PN 16	PN 16	PN 16	PN 25
	DN	10...40	15...25	15...50	65...150	15...150	15...150
	k_{vs} [m³/h]	0,63...25	0,25...6,3	0,63...40	50...360	0,16...400	0,16...400
	Temperature range [°C]	1...120 *	1...150 *	-25...150	-20...220	-20...220	-20...220
	Effective pressure [kPa]						
	Maximum differential pressure [kPa]	75...350	800...1200	300...800	100...800	350...1200	
Small stroke actuators	SSY319	Electromotoric actuator 3-position control Positioning time 150 s					
	SAS31.03	Electromotoric actuator 3-position control Positioning time 30 s					
	SAT31.008	Electromotoric actuator 3-position control Positioning time 8 s					
	SAT31.51	Electromotoric actuator 3-position control Positioning time 15 s, spring return facility					
	SAS61.03	Electromotoric actuator DC 0...10 V control Positioning time 30 s					
	SAT61.008	Electromotoric actuator DC 0...10 V control Positioning time 8 s					
Large stroke actuators	SAX319.00	Electromotoric actuator 3-position control Positioning force 800 N, Positioning time 120 s					≤ DN 50
	SAX319.03	Electromotoric actuator 3-position control Positioning force 800 N, positioning time 30 s					≤ DN 50
	SAX619.03	Electromotoric actuator DC 0...10 V control Positioning force 800 N, positioning time 30 s					≤ DN 50
	SKD32.21E	Electro-hydraulic actuator Positioning force 1000 N Spring return facility as per EN 14547, positioning time 30/10 s					≤ DN 50
	SKD32.50E SKD32.51	Electro-hydraulic actuator Positioning force 1000 N Spring return facility as per EN 14547, positioning time 120 s					≤ DN 50
	SKB32..	Electro-hydraulic actuator Positioning force 2800 N Spring return facility as per EN 14547, positioning time 120 s					≤ DN 50
Magnetic actuator	SKC32..	Electro-hydraulic actuator Positioning force 2800 N Spring return facility as per EN 14547, positioning time 120 s					≤ DN 65
	MVF461H MXG461B	Electro-hydraulic actuator DC 0...10 V control Available as combination of valve and actuator					

Key:

*Short-term

When building technology creates perfect places –
that's Ingenuity for life.

Never too cold. Never too warm.
Always safe. Always secure.

With our knowledge and technology, our products,
our solutions and our services, we turn places into
perfect places.

We create perfect places for their users' needs –
for every stage of life.

#CreatingPerfectPlaces
siemens.com/perfect-places



Article no. Z-500461703-en

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.