

# SCADA

SICLIMAT™ X

## **SIMATIC S7 interface for SCADA systems**

## **S7-SCADA**

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**Open data interface for the connection of SCADA systems to the SICLIMAT automation stations based on the SIMATIC S7.**

### **Use**

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The SIMATIC S7 SCADA interface is a convenient solution for the connection of SCADA systems to SICLIMAT X.

The purpose of a SCADA system (Supervisory Control and Data Acquisition) is to integrate various items of equipment irrespective of their manufacturers.

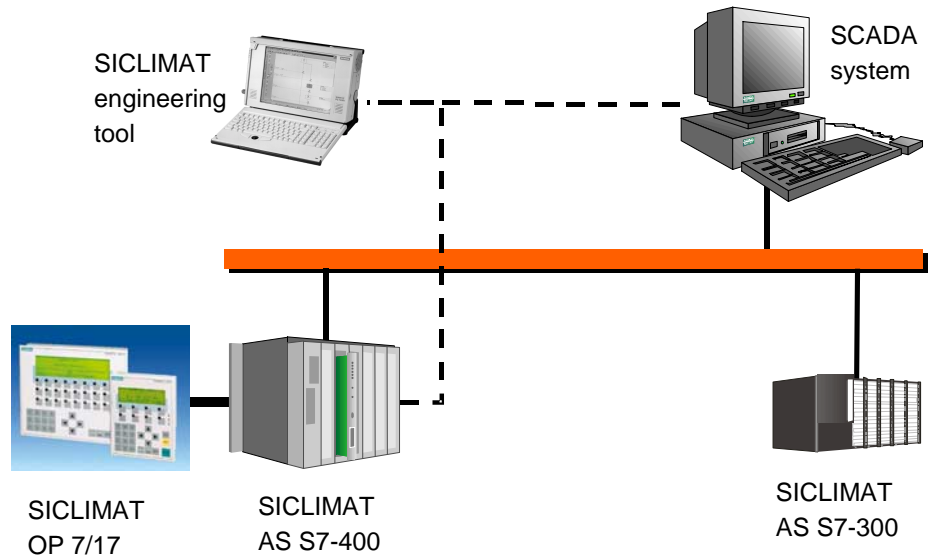
The SCADA system makes it possible to present the user with a uniform operator interface and uniform functional scope. SCADA standardises the separation of the automation level from the management level.

Unlike the SICLIMAT X management system, a SCADA system offers only a limited range of functions, comprising signalling, operation & monitoring, trend logging and archiving.

With the SCADA interface, it is also possible to connect other systems which access the operating, monitoring and signalling data. These third-party systems may include, for example:

- Human-machine interfaces of all kinds (e.g. operator panels)
- Office programs running under Microsoft Windows with integrated process data
- Mimic diagrams controlled by another PLC

Sample configuration of a plant incorporating a SCADA system:



This configuration consists of a SCADA system, a SIMATIC net bus system, SICLIMAT automation stations based on the SIMATIC S7-300 / 400, and, as options, the SICLIMAT OP7/17 local operator panel and the SICLIMAT X-PG engineering tool. The engineering tool is temporarily connected in the engineering phase.

Software

Through the SCADA interface, a SCADA system can perform the following functions:

- Operation
- Monitoring
- Signalling

The software package for the S7-SCADA interface includes the operating, monitoring and signalling data for all data points of an automation station, and comprises:

- Interface for the signalling system as a data range in the SIMATIC S7
- Interface for operation and monitoring as a data range in the SIMATIC S7
- Software for data acquisition and for implementing user commands in the automation station
- Import file for the SCADA system, with
  - Variable structures
  - User addresses
  - Unit text and message text
- Interface documentation
- Description of the SICLIMAT objects and parameters

The user is supplied with a run-time licence for the SCADA interface.

The SICLIMAT automation station software and the SCADA interface in the S7 are engineered from start to finish with the SICLIMAT automation station engineering tool. When the automation software has been engineered with this tool, the complete SCADA interface is generated automatically, including the documentation and the SCADA import file. This ensures consistency in the automation software, the

documentation and the SCADA Import file. The import files are supplied on external data storage media.

The user imports this data into the SCADA system. This causes the variable structures, including user addresses and unit and status text, to be generated automatically. The SCADA system (graphics, signalling functions etc.) is engineered via the user address. The interface for the signalling system incorporates a self-contained memory map of the messages, faults and out-of-limit conditions for the entire CPU, and allows fast efficient access from the signalling system. The interface for operation and monitoring contains details of all the data points, ensuring fast updating of plant schematics.

Changes and additions to the plant are cost-effective, because the SCADA-level engineering is retained.

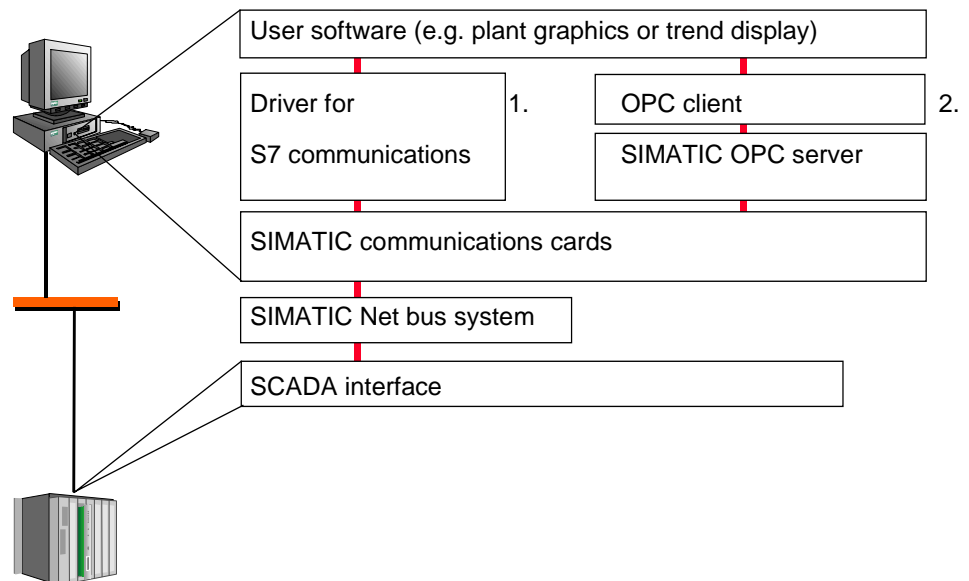
The SCADA interface can be operated in parallel with the SICLIMAT X-OS management system. It is also possible to operate it in parallel with one or more local operator panels (SICLIMAT OP7/17) or with a central operation and monitoring system (WinCC for building automation).

## Integration into the SCADA system

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There are various methods for integrating SIMATIC communications into a SCADA system or other PC-based system.

1. Driver for S7 communications
2. Use of the OPC client of the SCADA system and the SIMATIC OPC server



Depending on the SCADA system, the options are as follows:

- Use of the S7 communications driver provided by the SCADA system manufacturer
- Use of the OPC client of the SCADA system. In this case, a SIMATIC OPC server is also required.
- Use of SIMATIC S7 communications. This can be integrated as an open library into any application.

## Automation station accessories

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### **Run-time licence for basic HVAC modules**

Licence for one-off use of modules from the SICLIMAT module library on an automation station. One licence is required for each SIMATIC CPU.

### **Industrial Ethernet communications processor for SIMATIC S7**

SIMATIC communications processor CP 343-1 / CP 443-1, used to network the SIMATIC automation stations with SCADA or third-party systems via Industrial Ethernet. One communications processor is required for each automation station on the Industrial Ethernet.

### **Profibus communications processor for SIMATIC S7**

SIMATIC communications processor CP 343-5 / CP 443-5, used to link the SIMATIC automation stations into a network with SCADA or third-party systems via Profibus. One communications processor is required for each automation station on the Profibus.

### **MPI communications for SIMATIC S7**

No communications card is required for communication from the S7 automation stations. The MPI communications card is an on-board component of the CPU assembly.

## SCADA system accessories

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For details and order numbers for the accessories described here, please refer to the SIMATIC catalogue, CA01.

### **SIMATIC OPC server**

Software package for connecting the SIMATIC automation stations to a Windows PC with an OPC client or office application via OPC. OPC servers are part of the software for the SIMATIC communications card.

### **S7 communications**

The library and the driver used to connect the SIMATIC automation station to a PC with its own applications via S7 communications. The package is available for Windows, UNIX and LINUX. S7 communications for Windows is part of the software for the SIMATIC communications cards.

### **CP 5613 communications card**

Profibus communications card for PC with PCI slot including OPC server and S7 communications for Windows. Communications cards are also available for PCMCIA slots, fibre optic cables and Profibus DP.

### **CP 1613 communications card**

Industrial Ethernet communications card for PC with PCI slot including OPC server and S7 communications for Windows. Communications cards for PCMCIA slots are also available.

### **Softnet S7 for Windows**

OPC server and S7 communications for Windows on standard Ethernet card.

### **Softnet S7 for LINUX or UNIX**

S7 communications for LINUX or UNIX on standard Ethernet card or standard Profibus card.

## Ordering

When ordering, please specify the quantity, product name and type code.

Type	Order No.	Specification No.
<b>SW package S7 SCADA interface</b>	<b>6FL3101-1CA00</b>	<b>25/20010</b>

### Accessories

<b>Basic HVAC module run-time licence per automation station</b>	<b>6FL4211-4NC96</b>
<b>SIMATIC CP 343-1 Industrial Ethernet for S7-300</b>	<b>6GK7343-1EX10-0XE0</b>
<b>SIMATIC CP 443-1 Industrial Ethernet for S7-400</b>	<b>6GK7443-1EX10-0XE0</b>
<b>SIMATIC CP 343-5 Profibus for S7-300</b>	<b>6GK7343-5FA00-0XE0</b>
<b>SIMATIC CP 443-5 Profibus for S7-400</b>	<b>6GK7443-5FX01-0XE0</b>

## Technische Daten

	Type	S7-SCADA
Prerequisites	Software structure	SICLIMAT automation station software S7
	Engineering tool	SICLIMAT X-OS V3.1 with AS engineering SICLIMAT X-PG V3.1
	Automation stations	SIMATIC S7-300, all CPUs SIMATIC S7-400, all CPUs
	Bus systems	MPI Profibus Industrial Ethernet
SIMATIC S7 interface	Type	SIMATIC data modules
	Data types	Bit, byte (multi-state), IEEE reals
	Cycle time required in S7	< 10 ms
	Memory space required in S7	< 1 kbyte
	Access	Read, write, subscribe via S7 functions
	COV (change-of-value) data transmission	No
Interface documentation	Event-driven data transmission	No
	Delivery format	External data storage medium
	File format	SDS (text file with separators), suitable for import into Microsoft Excel / Microsoft Access
Performance	Number of SCADA systems per automation station	Depends on S7 CPU
	Number of automation stations per SCADA system	Depends on number of data points, and on bus system and SCADA system
	Data transfer rates	Depends on S7 CPU, bus system and SCADA system driver: Approx. 5 ms per data point with Ethernet and S7-400.
Usable data for the SCADA system	Signalling system (read only)	Messages Faults Out-of-limit conditions

Operation and monitoring	Data type: Plant	Operating mode, measured value, setpoint, fault, interlock release, optimisation, hours run
	Data type: Signalling	Actual status, fault, stored status
	Data type: Switch command	Operating mode, setpoint, measured value, fault, interlock release, optimisation, hours run
	Data type: Measured value	Measured value, fault, out-of-limits
	Data type: Control command	Operating mode, setpoint, measured value, fault
	Data type: Controller	Operating mode, setpoint, measured value, fault
SCADA structure data	Data type: Numerical value	Measured value, fault, delete, out-of-limits
	Variable names	SICLIMAT user address or hardware address
	Addressing the SICLIMAT automation station	Data module number, data byte and bit
	Additional info for analogue variable	Unit text (engineering units)
	Additional information for bit and byte variable	Status text