



**Connect sanitary fittings intelligently.**  
With the SCHELL SWS Water Management System.

The concern of operators, investors, sanitary equipment installers, planners or facility managers share today is the efficient and safe handling of drinking water. This applies equally to existing properties or new buildings. Three elements are at the focus here:

1. How can a hygienically flawless drinking water installation, most of all, be permanently ensured?
2. How can the building be operated more efficiently through targeted service actions and central parametrisation or how can the control of sanitary fittings be conducted more efficiently?
3. What solutions are available to integrate facility management with the goal of optimising water management energetically?

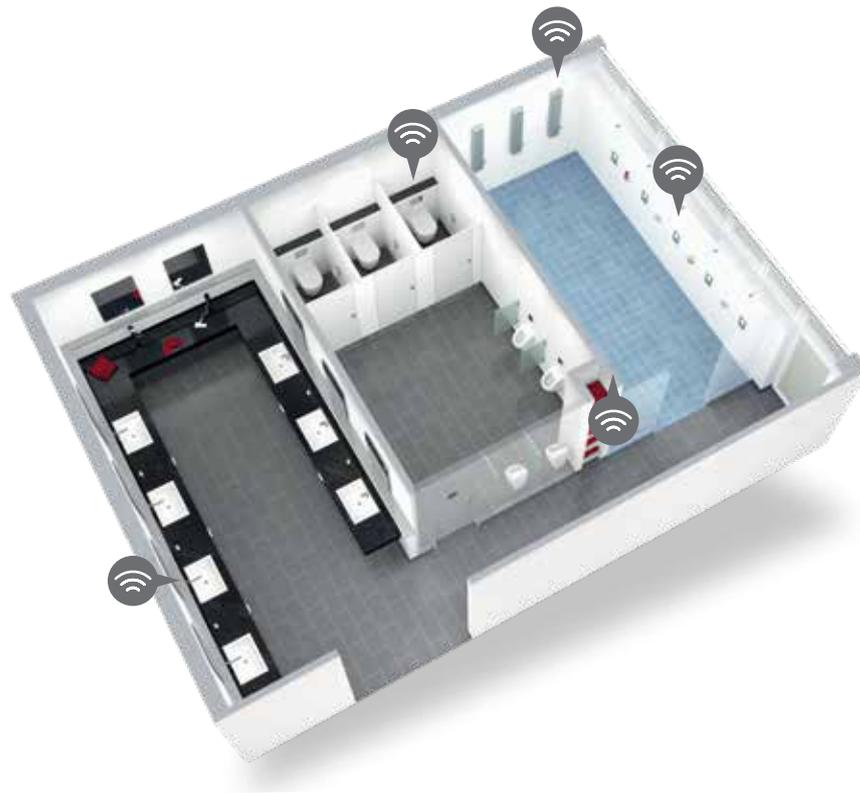
**SCHELL now has an innovative response to all these questions:**



**SCHELL SWS**

The intelligent SCHELL SWS Water Management System has been developed by SCHELL's hygiene experts specifically for public sanitary facilities. The system enables the networking, control and monitoring of all electronic fittings via the central water management server. From washbasin and shower fittings right through to WC or urinal fittings, and whether or not stagnation flush control or thermal disinfection is required, for example.

The special feature: the SCHELL SWS Water Management System interconnects fittings into both a wired or wireless network. Multiple SCHELL SWS Water Management Systems can be installed in the building, each with up to 64 networked subscribers (subscriber = bus extender). SWS gateways can then be used to integrate these systems into the building automation system.



**Benefits for operators**

- Optimal drinking water hygiene up to the point of use
- Convenient operation and maintenance of the drinking water system
- Straightforward analysis and end-to-end documentation
- Simple wired or wireless networking
- Can be expanded to include up to 64 subscribers

**Benefits for investors**

- Better protection of investments due to hygienically flawless, standards-compliant drinking water installation
- Lower initial investment costs due to inexpensive T-piece installation
- Greater operating efficiency for facility management

**Benefits for planners**

- Industry-standard planning, also with SCHELL SWS
- Simple selection and configuration thanks to fewer system components

**Benefits for installers**

- System with few components avoids ordering mistakes and ensures very simple installation
- Reliable setup thanks to room layout feature and commissioning tool

**Benefits for facility managers**

- Centralised, intuitive operation from any standard PC, tablet or smartphone

# SCHELL SWS contains everything you should expect from a modern, intelligent water management system.



## 1. Permanently hygienically impeccable drinking water installation

### **Stagnation flushes with SCHELL SWS: hygiene while saving water is no contradiction.**

The SCHELL SWS Water Management System not only offers you central control of stagnation flushes for all of the networked taps and fittings, but also includes a set of intelligent, software-based configuration options. These options enable perfect fulfilment of stringent hygiene standards as well as water conservation requirements. These basic options for stagnation flushes are available to you:

#### **Temperature-based actuation:**

- at PW C  $\geq 25^{\circ}\text{C}$
- at PW H  $\leq 55^{\circ}\text{C}$  (exception for Netherlands:  $\leq 60^{\circ}\text{C}$ )

#### **Scheduled actuation:**

- on a set date: e.g. Mondays at 2 a.m.
- recurring after n hours
- according to a defined flush plan

Just as reliable and water saving: stagnation flushes with T-installations. Here, the distribution line on the storey can be flushed via the last fitting, for example (long runtime) and then the short supply lines to individual fittings. Once the stagnation flushes have been electronically synchronised, the 'concurrency' used by technical architects and installers as the basis for their planning work can actually be achieved in practice by using stagnation flushes. This prevents the build-up of pipeline sediment that is problematic for hygiene. During retrofitting work to existing buildings, the bulk of these kinds of deposits are in fact provably broken up and flushed out.

### **Thermal disinfection with SCHELL SWS: with consideration of the accumulator utilisation.**

Look forward to centralised control of thermal disinfection for all networked fittings in sanitary facilities with a simple, time-saving system. And a system that now, for the first time, takes the capacity utilisation of the hot water tank into account. This is possible thanks to the SCHELL SWS section-based thermal disinfection. The advantage here is that hot water can be reheated to the right temperature in the interim. A thermal sensor also checks that the target temperature has actually been reached. Only then are the draw-off taps flushed and disinfected for 3 minutes.



## 2. Optimised facility management 3. Energetic optimisation

### **Efficient sanitary fitting parameterisation and control plus optimised facility management with SCHELL SWS:**

- Centralised configuration of all networked fittings: simple and complete
- Time-saving stagnation flush actuation: centralised instead of room-by-room
- Data analysis permits optimisation of sanitary installation operations in the building
- Early warning of low battery levels or solenoid valve defects – well before any fittings fail.
- Proactive maintenance based on empirical information from maintenance-free runtimes or analyses performed on system data (e.g. battery lifetimes)
- Straightforward integration of the SCHELL SWS Water Management System into a building automation system. The SWS gateways translate the SWS protocol into the various bus protocols.
- Temperature monitoring with PT 1000 temperature sensor – integrated into angle valve (e.g.)

### **Save energy thanks to the intelligent integration of SCHELL SWS into building automation:**

- Activation of ventilation no longer follows rigid schedules but is initiated according to the current level of utilisation of shower water or WCs
- Hot water demand in the system is determined in advance by recent user behaviour – and not when it is already falling below the target temperature

# SCHELL SWS.

## System components.

### 1 SWS Water Management System Server

The heart of the system is the SCHELL SWS Water Management Server and its intelligent software. This software handles the centralised configuration of fitting parameters, stagnation flushes, performance of thermal disinfection, and all analysis and documentation work. Data from up to 64 subscribers is transferred wirelessly or via a wired bus network. The SWS server can be controlled from a master facility management system via SWS gateways. Integration with the existing automation system is completed by a system integrator. In larger buildings, multiple SWS Water Management Systems can be operated parallelly.

### 2 SWS bus extender cable BE-K

The SWS wired bus extender transfers data from the fitting to the SWS server along a cable up to 350 m in length (total length of all cables must not exceed 1000 m). The same cable provides a supply voltage to the BE-K and fitting.

### 3 SWS wireless bus extender BE-F

The wireless bus extender enables wireless data transfer between the SWS server and the electronic tap. The supply voltage can be provided either via the tap's battery compartment or via a power adapter. When supplied with mains voltage, the wireless bus extender also functions as repeater (wireless mesh network).

### 4 SWS wireless manager FM

The wireless manager is used to bridge longer wireless distances: it functions as a repeater and is powered by a power adapter.

### 5 SWS bus mains adapter 30 V

The bus mains adapter provides power to all of the wired bus extenders and their networked fittings as well as the SWS server.

### 6 SWS gateways

The gateways enable the integration of the SWS Water Management System with the building automation system. A gateway translates the SWS protocol into the target standard bus protocol. Various models are available, depending on the protocols and data points that you require. One SWS gateway is required for each integrated SWS server.

### 7 SWS temperature sensor

The SWS temperature sensors record the water temperature: this data is used to control hygiene flushes and document system temperatures. To transfer the temperature data, the temperature sensors are integrated with the SWS network either by using the tap's bus extender or by using a dedicated bus extender.

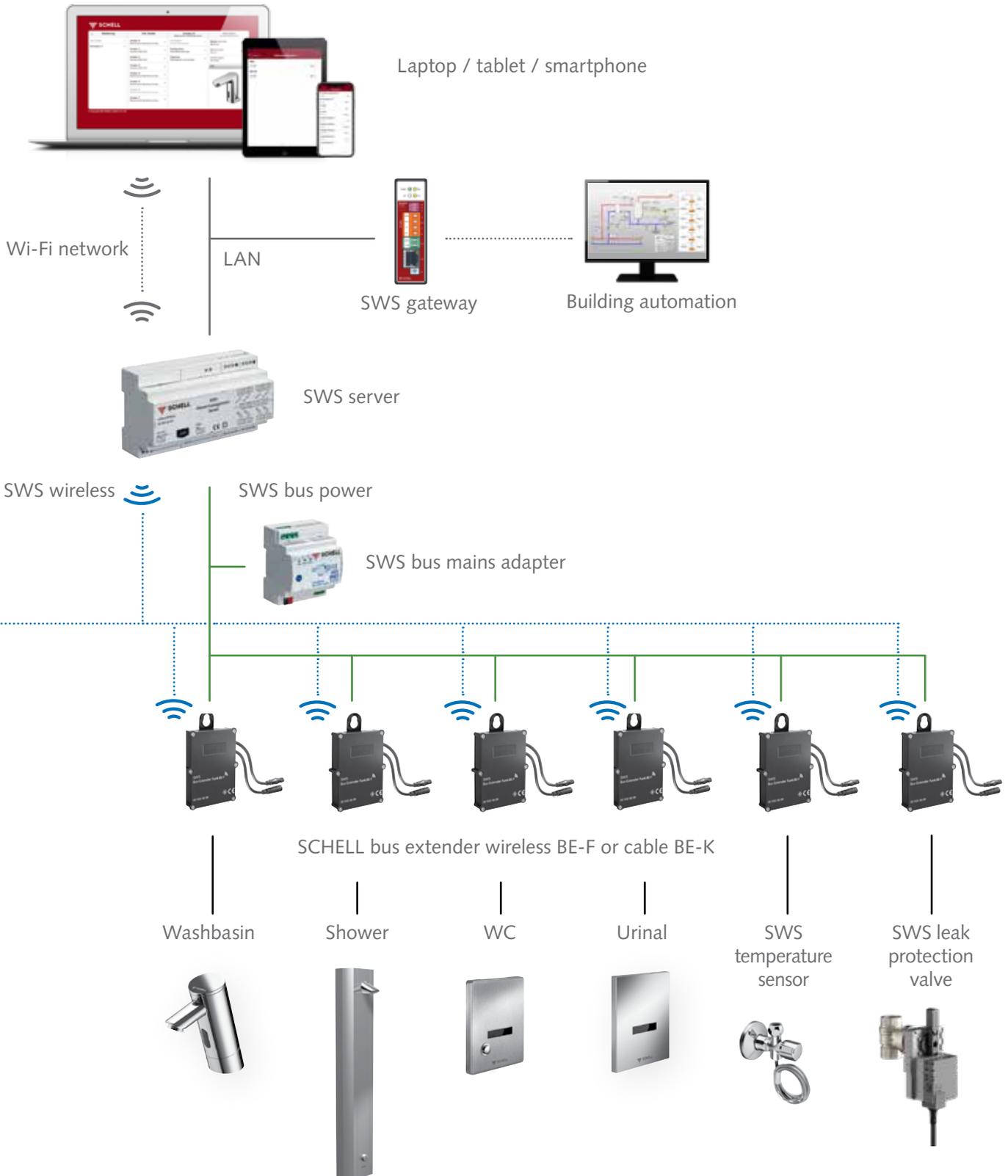


### Wireless mesh network for optimum wireless coverage.

The SCHELL SWS Water Management System utilises a wireless mesh network. A clear advantage: for larger distances, all wireless subscribers with mains voltage can simultaneously function as repeaters. Wireless signals from remote fittings are picked up by a closer fitting, for example,

and then forwarded to the SWS server. Accordingly, good wireless coverage is assured at all times.

In cases where unusually large distances need to be bridged, the SWS wireless manager FM can then be deployed as an additional repeater.



## Intelligent and versatile.

The functions from SCHELL SWS.



The SCHELL SWS Water Management System is a browser-based solution. This means that you do not need to install any software. To access server data, all you need is a web browser running on a PC, laptop, tablet or smartphone.

Thanks to the server's dual Ethernet and Wi-Fi interface, all configuration, setting and diagnostic work can be completed easily with a few mouse clicks.

## Parametrisation made easy.

Your options for configuring your fittings.

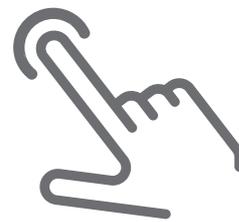
### Setting options for fittings with infrared sensor electronics



- Sensor detection range: short/medium/long
- max. runtime: from 1 to 360 seconds
- Run-on time: 0.6 to 60 seconds
- Energy saving mode: 1 to 254 hours
- Cleaning stop: on/off
- Cleaning stop duration: 60 to 360 seconds

(options depend on fitting)

### Setting options for fittings with CVD touch electronics

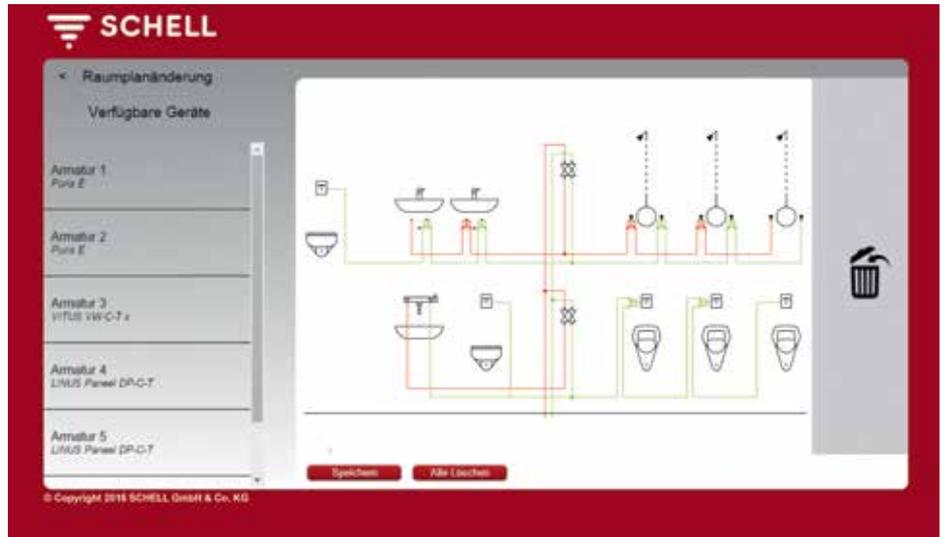


- Actuation force: soft/medium/hard
- Runtime: from 1 to 950 seconds

(options depend on fitting)

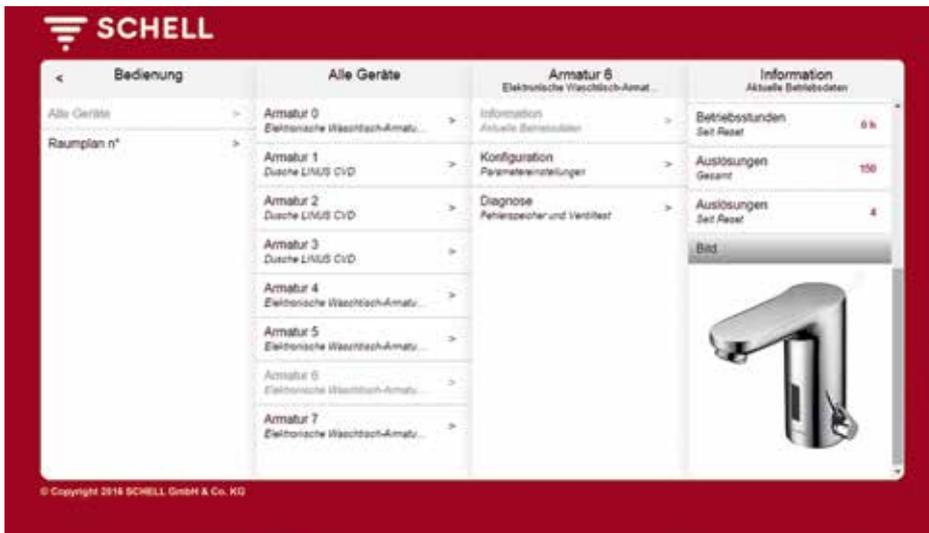
## Preparing of room plans

To help with the preparation of flushing plans, SCHELL SWS offers the option of configuring or scanning in room layouts. To do so, the connected SCHELL electronic taps are simply moved to the required positions via drag-and-drop and then named as appropriate. This gives system owners a real-time overview of the complete, networked installation and the parameters set for each individual fitting.



## Group creation

The SWS server can be used to access multiple fittings at the same time. For operations work, this feature offers simultaneous control of several fittings.



## Data security

All data captured and stored with SCHELL SWS is encrypted to provide protection against third-party access.

- The system is password-protected
- The Wi-Fi network uses WPA2 encryption
- Wireless communications from the wireless bus extender to the server are encrypted (AES-128).



### Stagnation flush

Programming stagnation flushes to be actuated at scheduled times, at fixed intervals, based on temperature readings or an external signal can all be completed with just a few mouse clicks. The flush duration of the flush can also be adjusted to match the dimensions of the pipe network. These are all important prerequisites for adequate flushing of the drinking water system so as to minimise the spread of bacteria.

### Thermal disinfection (TD)

Thermal disinfection can be controlled using the centralised SCHELL SWS Water Management System and performed via the server. To ensure that sufficient hot water for TD is always available, the installation can be partitioned into separate sections. With this approach, the server first sends a signal via a dry contact to the heating unit, instructing it to heat water to a minimum of 70 °C. Sector I is then flushed. The heating unit then reheats the water, flushes the next sector – and so on.



To provide end-to-end documentation that TD has been performed properly, a temperature sensor can be integrated that scans and records the water temperatures. All flushing runs can be programmed individually, logged on the micro SD card integrated into SWS server and repeated at any time.



angle valve PT 1000

**Good to know:** a key switch or password is used to guarantee operational security for TD.

### Cleaning stop

SCHELL SWS offers the option of deactivating fittings in a specific sanitary facility for cleaning purposes. To do so, an industry-standard switch is simply connected to the SWS and the corresponding single stop function is stored. When cleaning personnel activate this switch, even showers can now be cleaned without any risk of accidental actuation.





## Diagnostics

The SCHELL SWS Water Management System offers operators easy options for diagnosing their networked fittings. Errors can be queried quickly and reliably, ensuring that any necessary repairs can be carried out quickly and efficiently in a targeted manner.



## Documentation

A feature that is becoming increasingly important for operators of public sanitary facilities: all usage, stagnation flushes and thermal disinfections are recorded in the system, and can be read and used for record-keeping with standard office software. All data on the server is naturally secured against manipulation and is preserved in the event of a power failure. Nor is documentation only useful for providing a record of standards-compliant operation: it also drives optimisation of the building's sanitary installation operations – and, in turn, optimisation of facility management.

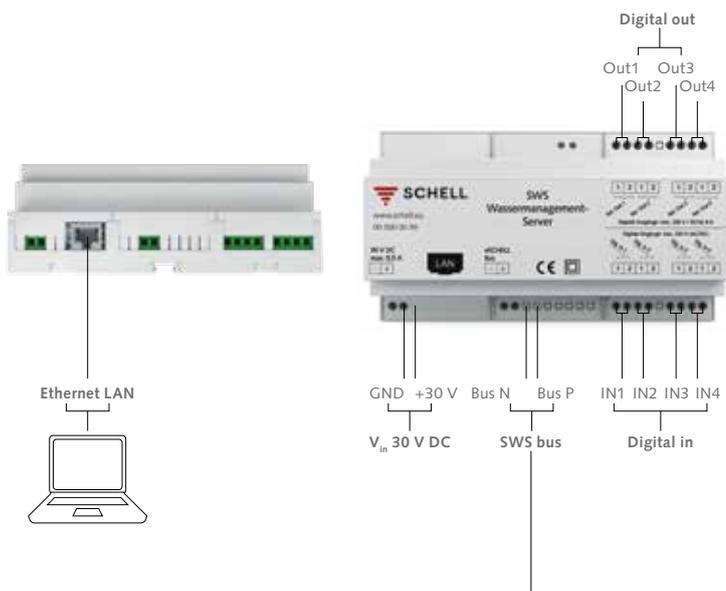
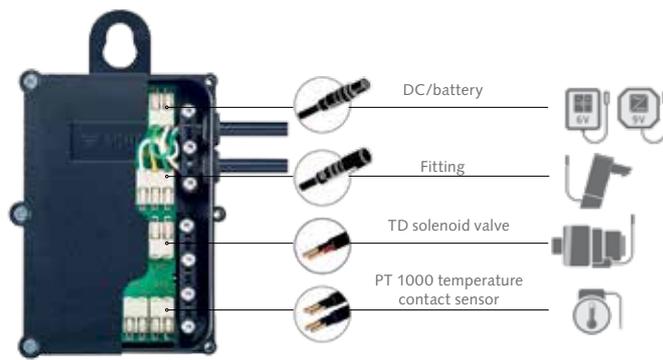
## Simple and quick. Installing SCHELL SWS.

Plug and play is the principle when it comes to the installation and networking of sanitary fittings with SCHELL SWS. Whether you have a wired or wireless network: maximum usability was the focus when developing this innovative SCHELL solution.

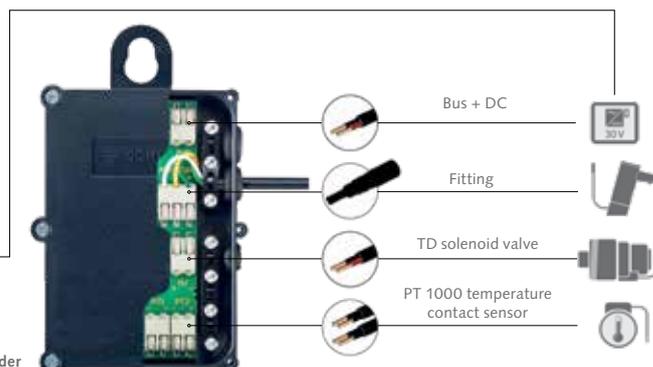
### Wireless networking

For wireless networking, the SWS wireless bus extender BE-F is simply installed using the existing connector between the power supply and the fitting. Ingenious: the bus extender also receives its power via the fitting's original power supply. No additional power supply is therefore required for the bus extender.

SWS BE-F wireless bus extender



SWS BE-K cable bus extender



### Wired networking

Integrating the SWS bus extender cable BE-K is just as simple as for wireless networking. The BE-K is simply connected to the fitting via the plug connector. Power requirements for the BE-K and fitting are met by the central power supply unit. The connection is made using a suitable cable. This cable also handles communications between the fitting and the water management server.

Incidentally: the wiring does not need to meet any particular structural requirements. Daisy-chain or star topology wiring and mixed formats are all feasible without any

problems. Only two minimum requirements need to be met: A single line between the water management server and a BE-K may not exceed 350 metres, and the total sum of all cable lengths must not exceed 1,000 metres.

### Compatible cable types for the bus line:

- H(St)H 2x2x0.8
- YCYM 2x2x0.8
- J-Y(St)Y 2x2x0.8
- JH(St) 2x2x0.8

# SWS gateways.

## The door to building automation.

SWS gateways enable the simple integration of the SCHELL SWS Water Management System with the building automation system. The gateway translates the SWS protocol into the target standard bus protocol.



Whatever your bus protocols and number of data points, a matching gateway is available. The total number of data points is specified by the building automation engineer to meet their requirements.

	200 Data points	500 Data points	1,000 Data points	2,500 Data points	Design (W x H x D** in mm)
BACnet IP, BACnet MSTP	005120099	005130099	005140099	005150099	1 (31 x 100 x 70)
BACnet IP, BACnet MSTP Model X Link*	005240099	005250099	005260099	005270099	2 (48 x 100 x 70)
MODBUS IP, MODBUS RTU	005160099	005170099	005180099	005190099	1 (31 x 100 x 70)
MODBUS IP, MODBUS RTU Model X Link*	005280099	005290099	005300099	005310099	2 (48 x 100 x 70)
OPC server DA 2.0	005200099	005210099	005220099	005230099	1 (31 x 100 x 70)
OPC server DA 2.0 Model X Link*	005320099	005330099	005340099	005350099	2 (48 x 100 x 70)
LON	005360099	005370099	005380099	005390099	3 (48 x 100 x 70)
KNX	005400099	005410099	005420099	005430099	3 (48 x 100 x 70)
LCN	005440099	005450099	005460099	005470099	3 (48 x 100 x 70)
Profinet	005480099	005490099	005500099	005510099	4 (48 x 100 x 70)
Profibus	005520099/10,000 data points				5 (60 x 195 x 130)

Other protocols, e.g. SAIA S-Bus, ESPA 4.4.4, CAN, DALI, available by request

\* X Link gateway for secure separation of two networks

\*\* Depth incl. top hat rail bracket

# Networking options.

## Overview.

The SCHELL SWS Water Management System is the first system capable of offering wired and wireless control of all fittings in public sanitary facilities so as to ensure optimal hygiene, superior water conservation and excellent facility management.

The adjacent table shows which fittings from the SCHELL product portfolio can already be networked using the SWS system.

Good to know: additions, changes and retrofits to the SWS system are quickly and easily possible at any time.

## Questions about SCHELL SWS?

Have questions about our innovative hygiene solution? Please get in touch. We look forward to advising you on your technical questions about the planning, layout and component selection for your application. And we will be happy to provide advice on ensuring the smooth operation of your SWS system after installation. All software updates are naturally provided to you as free downloads.

◆ VITUS bus extender integrated into the tap

◆◆ VITUS bus extender and TD solenoid valve integrated into the tap

System components		
Fitting-ranges		
	SWS server	SWS Bus-Mains adapter 30 V

WASHBASIN TAPS			
	XERIS E-T	•	•
	PURIS E	•	•
	VENUS E	•	•
	CELIS E	•	•
	VITUS VW-C-T	•	•
	VITUS VW-E-T	•	•
	LINUS W-E-M	•	•

SHOWER FITTINGS			
	LINUS D-C	•	•
	LINUS Basic D-C-T	•	•
	LINUS Panel DP-C-T	•	•
	VITUS VD-C-T o	•	•
	VITUS VD-C-T u	•	•

WC FLUSH VALVES			
	EDITION E MANUAL	•	•

URINAL FLUSH VALVES			
	EDITION E	•	•

Wireless network compatible		Wired network compatible	Optional accessories				
							
SWS wireless manager FM	SWS Bus-Extender Wireless BE-F	SWS Bus-Extender Cable BE-K	TD solenoid valve	PT 1000 temperature contact sensor	angle valve COMFORT PT 1000	LINUS outlet temperature sensor	LINUS inlet temperature sensor
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