Wallace & Tiernan® Analyzers and Controllers SFC Series
Continuous analysis of water parameters

General

The Wallace & Tiernan® SFC is an industrial measurement and control device for all individual water parameters which can be used to monitor process water and perform a wide variety of control tasks. It is a highly flexible measuring system that can be combined and extended in numerous different ways. Its main use is the measurement and control of disinfectants. Dosing pumps, electric stroke positioners and continuous actuators can be controlled to maintain a measured concentration.

Typical applications

- Potable waterworks and public utilities
- Disinfection of well water, coolant, boiler feed water, fluorinated media
- Food & beverage industry
- Swimming pools
- Wastewater plants

Features

The SFC measuring system is a modular system, consisting of an electronic module, a flow cell module and a sensor measuring module. The SFC electronic module is designed for handling single parameters. If two parameters need to be measured, it is possible to combine two electronic modules. Electronic modules can be connected using a CAN sensor/actuator bus.

For pH-corrected free chlorine measurement, for example, the SFC pH unit sends the value measured to the SFC system for free chlorine measurement, which then calculates and displays the correct value.

Benefits:

- Permits the use of the DEPOLOX® 5 bare electrode sensor electrode as well as all other sensors currently available in our sensor portfolio
- Four different control modes can be selected
- Measurement and control of individual parameter as well as multiple parameter when combined using a CAN sensor/ actuator bus
- Simple configuration and operation
- Easy data connection to visualization systems and Web technology

An example of a SFC system:
SFC pH for individual pH measurement

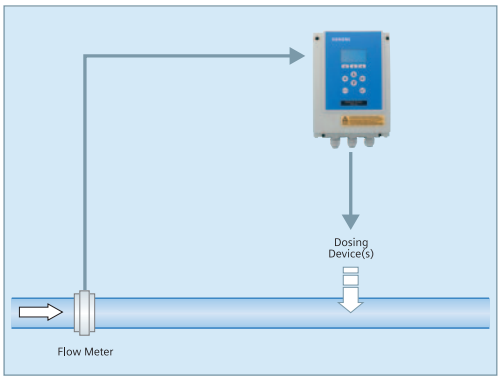
Product Sheet

Water Technologies

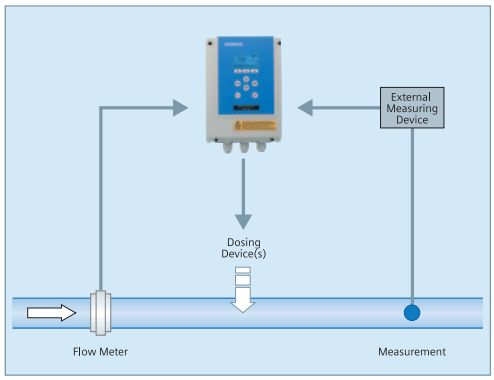
SIEMENS

The SFC system is available with the following functionality

Flow proportional control



Compound loop control
with external measurement (mA)



	SFC SC	SFC PC
External setpoint value for single feedback closed loop control and/or combi-control	–	✓
External dosing factor for flow proportional control	–	✓
Temperature input	–	–
Feedback input	✓	✓
2 digital inputs	✓	✓
mA outputs	✓	✓
Relay outputs	2	4
RS 232 interface for firmware update	✓	✓
Slot for fieldbus modules	–	✓
RS 485 interface	–	✓
CAN sensor/actuator bus interface	–	✓
SD card slot	–	✓

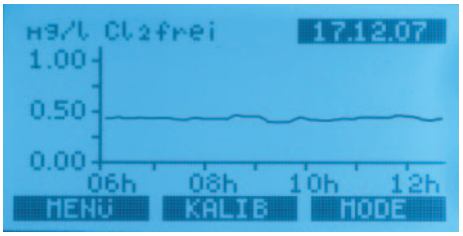
Sensor selection

The portfolio of measurements available from Siemens Water Technologies includes the following parameters;

- Free chlorine
- Total chlorine
- pH value
- Redox voltage
- Conductivity
- Chlorine dioxide
- Ozone
- Potassium permanganate
- Fluoride
- Temperature

Additionally, measurements with a Milliamp output can also be incorporated for use with the SFC.

The application and water quality will determine whether to use our fast reacting bare electrode sensors or less prone to membrane covered sensors (less prone to interferences). The DEPOLOX® 5 flow cell module is the bare electrode technology suitable for measurement of free chlorine, chlorine dioxide, ozone and potassium permanganate. The VariaSens flow cell module is used with out membrane based sensors available for free or total chlorine. Flow through adapters are available for the other individual measurements.



The line diagram shows all values of a day at a glance. The trend graph with a 30 day trend is available when the SD card is inserted.

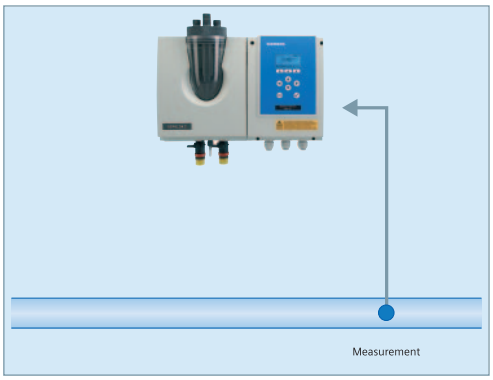
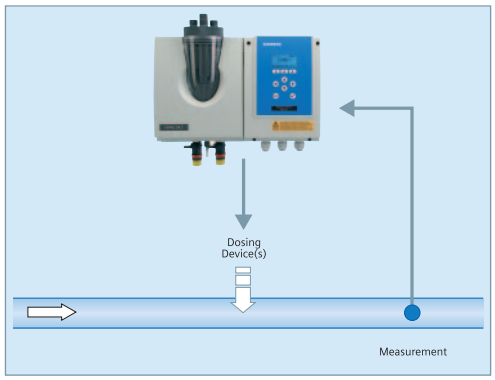
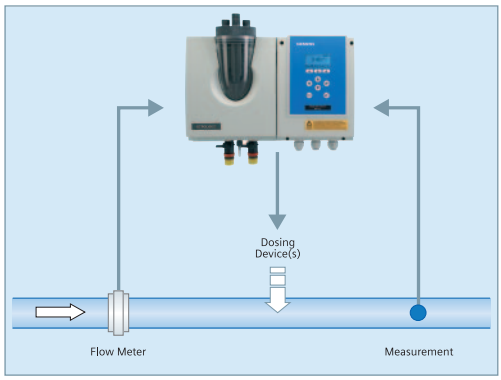
The electronic module immediately identifies which sensor has been connected. The system software then selects the appropriate units, measuring limits and calibration procedures.

In addition, all linear sensors can also be connected using the mA signal, in which case any measuring range and units can be selected. A calibration with one or two points is possible.

Control options

Both flow proportional and compound loop control are available with the SFC. The control mode required should be specified when ordering the equipment. With the wide range of SFC versions available, all conceivable water treatment applications, including single feedback closed-loop control, can be catered for.

The fuzzy logic compound loop control, which was previously included in the Wallace & Tiernan® process controller, has

Measurement	Measurement single feedback closed-loop control	Measurement with compound loop control
		
SFC **with corresponding measuring module**	**SFC** **with corresponding measuring module**	**SFC** **with corresponding measuring module**
–	✓	✓
–	–	✓
✓	✓	✓
–	✓	✓
✓	✓	✓
✓	✓	✓
4	4	4
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✓

now been integrated in the SFC PC system. Each measuring system also has an optional integrated controller that can also use an external setpoint selection (as well as with single feedback closed-loop control). Depending on the application, the control parameters can also be used to control actuators such as the V10k gas feed system, dosing pumps, and constant actuators such as frequency converters. This now also applies to CAN sensor/actuator bus enabled dosing devices.

The flow proportional control SFC SC enables proportionally controlled feed of chemicals used in water treatment and for industrial applications. The dosing capacity of the connected device is controlled automatically, on the basis of a measuring signal, for example an external flow rate measurement, and a configurable dosing factor. If actuators with feedback are used, the non-linearity can be adjusted using a maximum of 11 calibration points.

For further technical details, please refer to the appropriate documentation. Separate product information leaflets are available for the SFC PC process controller, for the flow proportional control SFC SC, and the individual parameters.

Additional features

Using the CAN sensor/actuator bus you can run two units as one, for example, two SFC units, which exchange values via the interface for compensation or further processing. In future, it will also be possible to integrate servo drives. One slot is available to connect field bus systems, p.e. PROFIBUS DP.

The Multi-function controller MFC can be used for measuring several parameters.

Technical data SFC Electronic Module

Display:	Graphical display, resolution 128 x 64 pixels, white background illumination
Measurement inputs:	1 x measured value input (electrically isolated up to 50 V to ground) for plug-in cards of the sensor measuring module (not with SFC SC): ▪ 3-electrode cell for chlorine, ozone, chlorine dioxide and potassium permanganate DEPOLOX® 5 ▪ Membrane sensors for total chlorine TC1/TC1-S, free chlorine FC1, chlorine dioxide CD7, ozone OZ7 ▪ pH value ▪ Redox voltage ▪ Fluoride ▪ Conductivity ▪ mA/V input 1 x mA input for flow rate 0 – 20 mA/4 – 20 mA 1 x mA input for external setpoint or dosing factor 0 – 20 mA/4 – 20 mA (not applicable to SFC SC) 1 x temperature input PT 1000 (0 – 50 °C/32 – 122 °F) with sensor error display (not applicable to SFC SC/SFC PC) 1 x feedback input for servo motor position feedback (1 kΩ, 5 kΩ, mA, V)
Digital inputs:	2 x for voltage-free contact (< 100 Ohm) for controller stopp, flow control
Relay outputs:	4 free selectable two-way switches for process monitoring; 2 contacts for process monitoring (control output over relay contact); SFC SC: 2 contacts for control
mA output:	1 x mA output for registration or control output (freely configurable) Output 0/4 – 20 mA Accuracy < 0.5 % FS Load max. 500 Ohm Temperature drift max. 0.2 %/10 °C Load monitoring Electrically isolated up to 50 V to ground
Interfaces:	1 x RS 485 for connection to a ChemWeb Server, OPC-Server Data Access V2.0, CMS software 3.0, SECO-S7 (not applicable to SFC SC) The RS 485 interface is electrically isolated up to 50 V to ground. 1 x CAN sensor/actuator bus interface for controlling actuators and evaluating external measurements and module communication (not applicable to SFC SC) 1 x slot for fieldbus connection (not applicable to SFC SC) 1 x RS 232 for firmware updates (not electrically isolated)
Memory card:	1 x SD memory card slot for installation of an SD memory card (not applicable to SFC SC)
Power supply:	100 – 240 V AC ± 10 %, 50 – 60 Hz, 30 VA 24 V DC ± 20 %, 30 W
Enclosure:	IP 66
Tests and labeling:	CE conformity marking; UL/CSA approved Inspected for EMC in accordance with EN 61326-1 Tested for electrical safety in accordance with EN 61010-1
Ambient temperature:	0 – 50 °C (32 – 122 °F) (do not expose to direct sunlight)
Storage temperature:	-20 to +70 °C (12 – 158 °F)
Dimensions (W x H x D):	185 x 265 x 145 mm (7.3 x 10.4 x 5.7 “)
Weight:	approx. 2.5 kg (5.5 lbs)

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Water Technologies

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