



19" sample gas conditioning system SCS

In gas analysis, it's important to condition gas before feeding it into the analyser. This requires components such as a sample gas cooler, sample gas pump, filter, condensate pump and flow meter. Additional functions – e.g. feeding calibrating gases — may be required depending on the application.

All of these components are combined in the 19" sample gas conditioning system SCS. Modularity was given high priority when designing this unit, as it allows the unit to easily be adapted to various tasks at a low cost. The control is adapted to the respective application and can be executed manually or externally. The system status is indicated on displays at the front and can also be retrieved externally. Combining the SCS with a sample gas probe and an analyser allows a complete gas analysis system to be quickly and easily assembled. With the addition of a control unit programmable from memory, this system can then also be automated. All components requiring maintenance (e.g. filters) can easily be accessed from the front.

This data sheet describes one possible system variant. Please refer to the separate questionnaire for different variation options.

Our sales team will be happy to assist you with building a conditioning system suitable for your application. You can find the relevant contacts on our website www.buehler-technologies.com.

Includes all required gas conditioning components

Modular design makes it cost-effective

Easy to install: fully assembled and fully wired

Simple design for low maintenance costs

1 or 2 gas paths

2 gas cooler performance levels

2 standard volume flows

Up to 5 calibrating gases

Materials in contact with media safe for aggressive media

Optional acid meter

Manual or external control

Self-monitoring

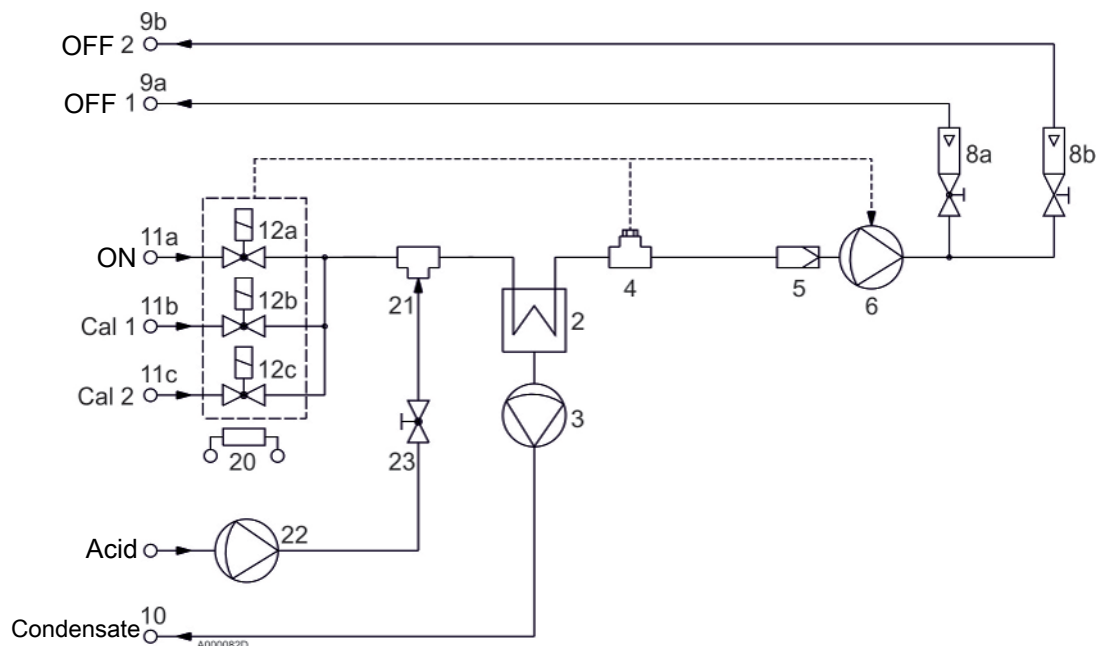
Integrated programmable calibration and blowback control

Virtually any number of connections



Description

The modular design allows for a wide range of circuits and control versions. It is not possible to list these all here. Therefore, the system shown in the large photo is described below as an example. The views and dimensions are shown on the last page. Not all parts described here are required in every system (e.g. acid metering).



During measurement, the sample gas is drawn through the heated valve block (12) and the sample gas cooler (2) using a sample gas pump (6). The moisture contained in the gas condenses in the glass heat exchanger of the sample gas cooler (2). The condensate pump (3) discharges the condensate. Phosphoric acid is added upstream of the cooler via the pump (22), which is controlled by a throttle valve (23), in order to reduce the leaching of sulphur dioxide in the sample gas cooler (2).

The cooling block temperature of the sample gas cooler (2) is shown on the display at the front of the housing. If the cooler is overloaded, and thus outside the permissible cooling block temperature of 3 K around the set output dew point, an error message will appear and the sample gas pump (6) will be stopped to prevent damage downstream along the gas path.

As a further safety measure, a humidistat (4) installed downstream from the sample gas cooler (2) triggers an alarm and switches off the sample gas pump (6) as soon as small amounts of moisture are present. This is also displayed as an error message.

A fine filter (5) mounted on the front panel of the system protects downstream components and analysers from contamination by particles. The flow meters (8) with needle valve (in this case 2 pieces) form the end of the gas path.

To calibrate the system, calibration gases (in this case 2) can be applied to the input of the measuring system with the solenoid valves (12b, 12c). These sit with the inlet valve (12a) on a heated manifold block. The temperature is monitored by the control unit.

This system contains the following materials in contact with media: stainless steel, FKM, Novoprene, Tygon (Norprene), PVDF, PTFE, PP. The tubing is made of FKM.

The basic system shown here is controlled by a rotary switch with which the functions "external control", "calibration gas 1", "calibration gas 2" and "measurement" can be selected. The condensate pump can be switched off using a toggle switch to allow the pump hose to be changed easily.

All status signals of the measuring system are displayed on the front panel and can be monitored via an electrical connection on the rear of the system. All system statuses can also be controlled externally via a second connection.

Technical Data

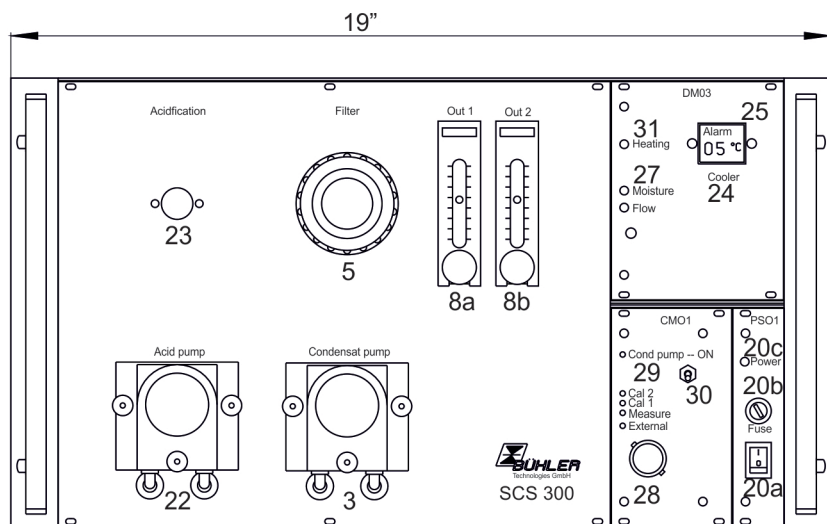
Key data of the 19" SCS sample gas conditioning system

Possible sample gas coolers (number of gas paths)	TC-Standard (1 path)	RC 1.1 (1 path)	RC 1.1 (2 paths)
Gas paths			
Number of outputs/calibration gases	Varies by application		
Materials in contact with media, standard ²⁾	FKM, PTFE, stainless steel, Novoprene, Tygon (Norprene), PVDF, PP ²⁾		
Maximum pressure ³⁾	Depends on applications and assembly		
Gas connections (standard)	Hose couplings DN 4/6		
Standard flow rates free-flowing	300 l/h	550 l/h	2 x 300 l/h
At -150 mbar rel. at inlet	150 l/h	350 l/h	2 x 150 l/h
At +120 mbar rel. at output			
Dead volume (varies by version)	85 cm ³	100 cm ³	70 cm ³ each
Electrical specifications			
Electrical control connections	Switched by contact, common supply		
Electrical status outputs max.	230 VAC/150 VDC; 0.5 A; 50 VA, potential-free		
Power supply	115 V/60 Hz or 230 V/50 Hz		
Power input (varies by version)	200...350 VA	450...550 VA	500...600 VA
Cooler Data			
Cooling capacity at 25 °C (40 °C) ¹⁾	70 (30) kJ/h	360 (100) kJ/h	360 (100) kJ/h
Maximum flow rate ¹⁾ (steel/glass)	300 l/h	400 l/h	2 x 200/125 l/h
Max. Gas inlet temperature ¹⁾	180 °C	180 °C	180 °C
Max. Input dew point (1 bar abs.) ¹⁾	65 °C	80 °C	80 °C
Ambient temperature ¹⁾	50 °C	50 °C	50 °C
Output dew point	Standard 5 °C; factory-set 3...15 °C		
Dew point stability static	0.2 K	0.2 K	0.2 K
General Data			
Dimensions	see table below		
Weight (varies by version)	15...20 kg	15...20 kg	25...30 kg
Ready for use after max.	10 min	15 min	15 min

¹⁾ Maximums vary in a complex manner, not only by the ambient temperature and the corresponding cooling capacity, but also by the heat exchanger materials used and the actual gas parameters. Once the application has been defined, we will calculate the required cooler slot. For additional information about these relationships, we suggest reading the "Help" section in our gas cooler configuration program.

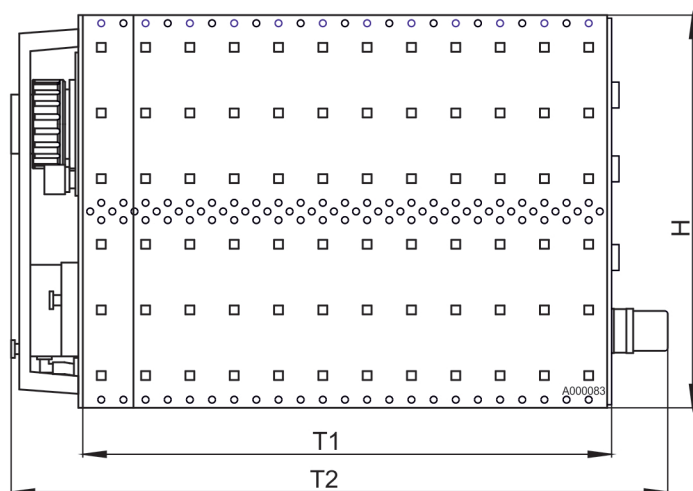
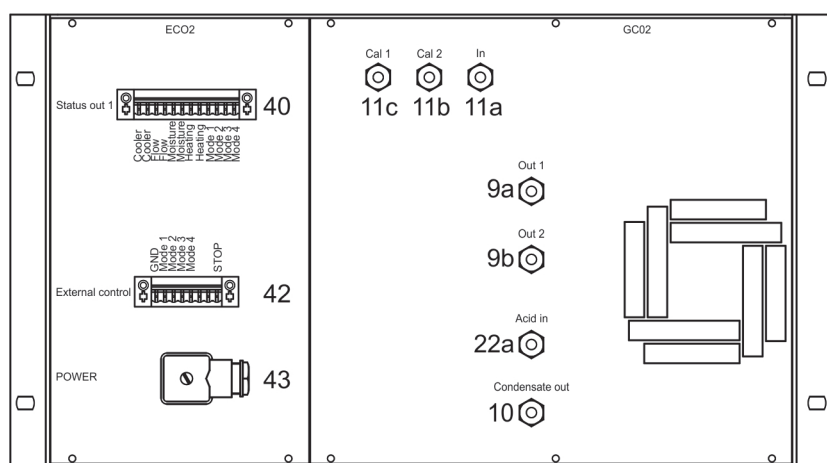
²⁾ The choice of material for the gas paths can also be restricted according to your requirements.

³⁾ The pressure values depend on the required component configuration. Internal piping for higher pressures is possible if required.



Legend

- 3 Condensate pump
- 5 Filter
- 8 a,b Flow meter outputs
- 9 a,b Gas outputs
- 10 Condensate output
- 11 a Gas input
- 11 b,c Calibration gas inputs
- 20 a Mains switch
- 20 b,c Main fuse and LED
- 22,23 Dosing pump and valve
- 22 a Acid connection
- 24,25 Cooler display with alarm LED
- 27 Humidity alarm LED
- 28 Selector switch
- 29 System mode display
- 30 Condensate pump switch
- 31 Heating LED
- 40 System status and mode outputs
- 42 External control inputs
- 43 Mains connection



Legend

SCS with cooler

	TC-Standard	RC1.1 (1 path)	RC1.1 (2 paths)
H	6 He	6 He	9 He
T1	355 mm	475 mm	475 mm
T2 approx.	420 mm	540 mm	540 mm

Ordering instructions

Please complete the separate form for your application. You can download the form from our website www.buehler-technologies.com or contact our sales team. Based on the information you provide in the form, we will create a customised system selection for you.

For a treatment system with 2 gas paths, please complete one form for each gas path. When selecting the extensions, please note that the space for the front panel elements is limited.

Please use the second page for explanations/comments and number them consecutively. Please enclose existing or additional specifications and data such as material flow plans.