

TC4SC4

4 fold Temperature and Agitation Control.



The Concept

With the parallel temperature and agitation control module **TC4SC4**, you can control the heating and/or cooling of four reaction vessels as well as the four stirrer plates simultaneously.

■ Continuous or Interval Mode

Each outlet has its own digital setpoint for temperature, stirrer speed and magnetic power output, as well as different available operation modes (e.g. continuous or interval).

■ Adjustable Power Output

The **TC4SC4** Module has its own microprocessor and can be operated free-standing or as part of a **DASGIP** cultivation system.

The Application

The **TC4SC4** Module is perfect for applications where biological culture vessels have to be stirred with different and controlled speeds as well as individually temperature controlled.

■ Optimized for Cell Culture

The **TC4SC4C** Module has been developed especially for cell culture applications. Supporting slow rotating stepping motor stirrer plates and adjustable power output, micro carriers, culture broths as well as cell suspensions can be stirred with low stirrer speeds.

■ Optimized for Microbiology

The **TC4SC4F** has been developed especially for microbiology applications. Powerful magnetic stirrer plates with very compact design facilitate the stirring of viscous media. Both stirrer plate types used are encapsulated hermetically in stainless steel housings and are therefore protected against microorganism contamination.

■ Heating, Cooling and Heating & Cooling

The **TC4SC4** Module can control standard heating mats and also cooling valves. Each outlet can be individually switched to heating or cooling operation; a combined heating & cooling is also possible. An additional temperature inlet for heating elements with an integrated overheating safety sensor is at hand.

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The **TC4SC4** is perfect for the optimization of stirrer and temperature control conditions for individual culture vessels. As part of the DASGIP cultivation systems fedbatch-pro® or cellferm-pro®, individual temperature and stirrer speed profiles can be defined and pO₂ setpoints can be controlled via the stirrer speed.

The Advantages

The parallel temperature and agitation control module **TC4SC4** facilitates individually controlled setpoints for temperature and stirrer speed in four culture vessels.

Temperature, stirrer speed, power output and all other parameters can be digitally adjusted at the device and are listed in the display.

■ Maintenance-Free Stirrer Plates

A second inlet for a temperature sensor in the heating elements facilitates additional security. The real time control of the power output guarantees exact and reproducible results. The maintenance-free stirrer plates accord to the requirements of cell culture (TC4SC4C) and microbiology (TC4SC4F) applications.

■ Simple Powerful PC Software

Several modules can be connected via their serial interfaces with a PC and can consequently be externally controlled using the DASGIP-EasyAccess Software, which is included in the delivery. That way, online graphs can be displayed and process values logged.

Specifications	TC4SC4C - Cell Culture	TC4SC4F - Microbiology
Control Unit		
Control output sets	4	4
Dimensions (WxDxH)	300 x 320 x 190 mm	300 x 320 x 190 mm
Permissible ambient conditions	5 to 40 °C at max. 80% humidity	5 to 40 °C at max. 80% humidity
Electrical supply	115 - 230 VAC, 50/60Hz	115 - 230 VAC, 50/60Hz
External digital interface	RS232 / RS485	RS232 / RS485
Alarm contacts global	1 x relay contact (nc/no)	1 x relay contact (nc/no)
Temperature Control		
Temperature range	-15 °C to 100 °C	-15 °C to 100 °C
Resolution	0.1 K	0.1 K
Accuracy	0.1 K	0.1 K
Temperature sensor inputs	Platinum RTD (100 Ohm)	Platinum RTD (100 Ohm)
Heating power per output (max.)	250 W (115 - 230 VAC, 50/60 Hz)	250 W (115 - 230 VAC, 50/60 Hz)
Max. load on cooling output	10 W (115 - 230 VAC, 50/60 Hz)	10 W (115 - 230 VAC, 50/60 Hz)
Safety interlock temp. range	20 °C to 100 °C	20 °C to 100 °C
Alarm contacts per output	1 x relay contact (nc/no)	1 x relay contact (nc/no)
Stirring Control		
Speed range and stability	5 - 120 rpm +/- 0.1 rpm	60 - 1500 rpm +/- 1 rpm
Drive		
Stirring volume	25mL - 20L	1mL - 1500mL
Stirring power	0.4 - 4 W adjustable	1 - 20 W adjustable
Dimensions (WxDxH)	180 x180 x60 mm	180 x180 x60 mm
Weight	app. 3.4 kg	app. 3.4 kg
Operating voltage	24 V _{rms}	45 V _{rms}
Permissible ambient conditions	-10 to 56 °C at 100% humidity	-10 to 56 °C at 100% humidity
Max. operating temp. in water	0 to 50 °C	0 to 50 °C