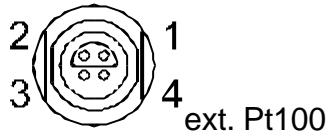


9. Electrical connections



Notice:

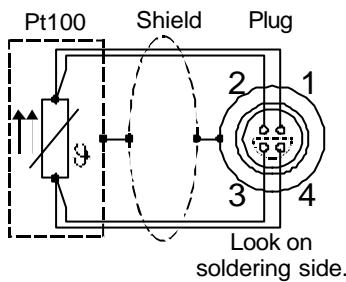
Use shielded cables only.
The shield of the connecting cable is electrically connected to the plug housing.



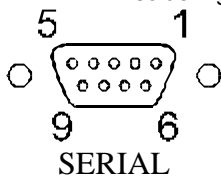
Socket for external Pt100 sensor

Pin assignment:

Pin	Signal
1	I+
2	U+
3	U-
4	I-



The shield of the connecting cable is electrically connected to the plug housing and the sensor tube.



RS232/RS485 serial interface (20)

This port can be used to connect a computer with an RS232 or RS485 cable for remote control of the circulator.

Pin assignments RS232:

Pin 2	RxD	Receive Data
Pin 3	TxD	Transmit Data
Pin 5	0 VD	Signal GND
Pin 6	DTR	Data terminal ready
Pin 7	RTS	Request to send
Pin 8	CTS	Clear to send

Pin assignments RS485:

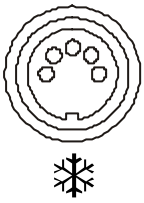
Pin 3	A	
Pin 5	0 VD	Signal GND
Pin 8	B	

Pins 1; 2; 6; 7; 9 are reserved - do not use!

Interface correspondence: RS232:

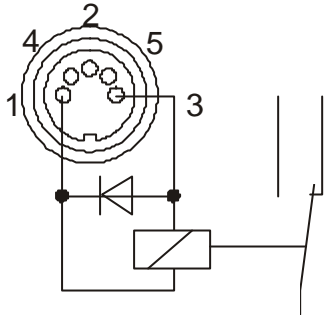
Circulator 9-pole		PC 25-pole		Circulator 9-pole		PC 9-pole
Pin 2 RxD	⇔	Pin 2 TxD		Pin 2 RxD	⇔	Pin 3 TxD
Pin 3 TxD	⇔	Pin 3 RxD		Pin 3 TxD	⇔	Pin 2 RxD
Pin 5 GND	⇔	Pin 7 GND		Pin 5 GND	⇔	Pin 5 GND
Pin 6 DTR	⇔	Pin 6 DSR		Pin 6 DTR	⇔	Pin 6 DSR
Pin 7 RTS	⇔	Pin 5 CTS		Pin 7 RTS	⇔	Pin 8 CTS
Pin 8 CTS	⇔	Pin 4 RTS		Pin 8 CTS	⇔	Pin 7 RTS

RS232 interface cable 9-pin / 9-pin, 2.5 m - Order No.: 8 980 073



☼ / Control output

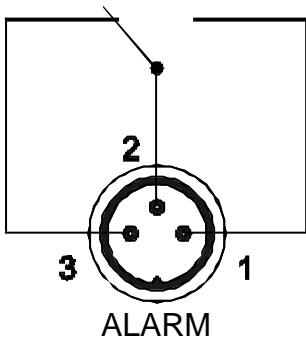
The ☼ connector may be used for control of JULABO refrigerated circulators or as output for alarm messages.



Circuit: Operation = relay powered
 Alarm = relay not powered

Pin assignment:

Pin	Signal
1	+24 V (I max. current 25 mA)
2	0 V
3	Alarm relay
4	Reserved - do not use!
5	Cooling pulse



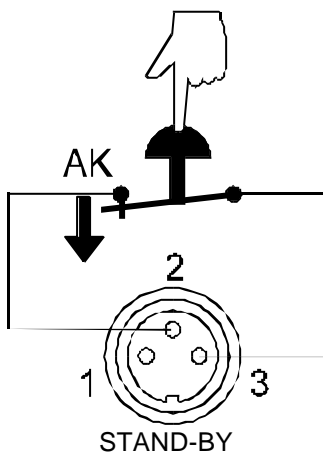
Alarm output

(for external alarm signal)

This potential-free change-over contact is activated in case of an alarm when pins 2 and 3 are connected.

Switching capacity max. 30 W / 40 VA
 Switching voltage max. 125 V~/~
 Switching current max. 1 A

Functional description see page 50



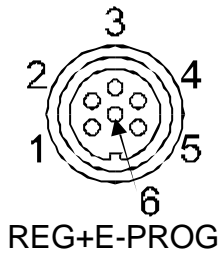
STAND-BY input

(for external emergency switch-off)

Pin assignment:

Pin	Signal
1	not connected
2	5 V / DC
3	0 V

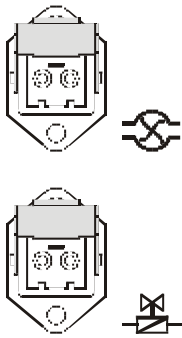
Functional description see page 49



Programmer input / temperature recorder output

Pin	Signal
1 Voltage output	Channel 1 0 ... 10 V
2 Voltage output	Channel 2 0 ... 10 V
3 GND for outputs	0 V
4 Programmer input	EPROG 0 to 10 V / 0 to 20 mA
5 Current output	Channel 3 0 to 20 mA / 4 to 20 mA
6 GND for Programmer	0 V

Functional description see page 46



Control connectors (13, 14)

The control output (14) can be matched to solenoid valves for different tasks.

See menu settings on page 45

See return flow safety device on page 21

See controlled countercooling on page 19.

The control output (13) is not powered in the OFF condition.

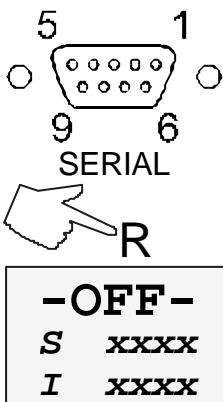
An external pump motor can be connected.

Output voltage: 230 V~ / max. 1.25 A

The fuse M 1.25 A is assigned to the control outputs.

10. Remote control

10.1. Setup for remote control



1. Check the interface parameters for both interfaces (on circulator and PC) and make sure they match.
In the menu >Interface< set the menu item >Type< to >RS232< or >RS485<.(Serial interface see page 53)
2. In the menu >Configuration< set the menu item >Setpoint< to >RS232< or >RS485<.
(>Configuration< see page 29)
3. Connect both units with an interface cable..

Like all parameters which can be entered through the keypad, interface parameters are stored in memory even after the circulator is turned off.