



Temperature controller ERZ



- Auto-tuning
- Simple adjustment
- Manual control of output in connection with service or starting
- LED step indication
- LED indication of sensor error
- Frost thermostat input
- Optional connection of limit sensor
- Two-step regulator 0-10V DC
- Setback of temperature on external timer
- Parallel displacement of room temperature
- DIN rail mounting
- 24V AC/DC regulator series

Application

ERZ comprises a series of compact and easily set regulators for the regulation of small and medium-sized heating and ventilation systems, e.g. heating and cooling surfaces, and floor heating.

Product range

Type	Product	EAN-nr.
ERZ-3951	Temperature regulator, range +5/+40°C. Two heating steps (0-10V DC). Potentiometer for min. temperature limitation.	5703502540863
ERZ-3952	Temperature regulator, range +35/+105°C. Two heating steps (0-10V DC). Potentiometer for min. temperature limitation.	5703502540870
ERZ-3953	Temperature regulator, range +5/+40°C. Two heating steps (0-10V DC). Potentiometer for max. temperature limitation.	5703502540887
ERZ-3954	Temperature regulator, range -10/+35°C. Two cooling steps (0-10V DC). Potentiometer for min. temperature limitation.	5703502540894
ERZ-3955	Temperature regulator, range -10/+35°C. One heating step and one cooling step (0-10V DC) with adjustable neutral zone between the steps. Potentiometer for min. temperature limitation.	5703502540900
	Setback of temperature by external timer (all types ERZ)	
	Accessories	
ERZF-95	Room sensor for wall mounting with built-in potentiometer for parallel displacement of setpoint $\pm 5^\circ\text{C}$	5703502540962
ETF-995	Room sensor for wall mounting	5703866102110
ETF-1195	Duct sensor	5703866100413
ETF-195	Floor sensor	5703866100817
ERZP-10	Potentiometer for parallel displacement of setpoint $\pm 5^\circ\text{C}$ (for panel door mounting)	5703502540931
ERZS-10	Scale for ERZP-10	



ERZF-95



ETF-995



ETF-1195



ERZP-10



Function

ERZ is a proportional regulator with built-in auto-tuning which automatically eliminates deviations in the P-band and adjusts the regulator to the load. The auto-tuning function saves the traditional time-consuming adjustment of the system when using conventional control relays. ERZ ensures a very constant regulation of small and medium-sized systems.

The ERZ series is equipped with a number of important functions:

0-10V DC output signals for sequential control: Two heating steps, two cooling steps, or one heating step and one cooling step.

Temperature limitation: Sensor connection for max. or min. limitation. The temperature can be set on the regulator.

Setback of temperature: The series has a built-in temperature setback function which is activated by an external timer. The setback temperature can be set on the regulator.

Frost protection: Connection for mechanical frost thermostat.

Technical data

Power supply	24V AC/DC
Power consumption	3 VA
Temperature settings	see table
DC-output	2 × 0-10V DC (max. 5 mA)
Regulation mode	Auto-tuning
Ambient temperature	-10/+40°C
Housing	IP 20
Dimensions (mm)	L/86 W/52.5 D/58 mm

Temperature limitation

When a sensor (limit sensor) is connected to terminals 10 and 11, a max. and min. temperature can be set on the front panel of the regulator.

Min. adjustable limitation (excl. ERZ-3953)

The setting is made on the front panel. This function is only active if a limit sensor is connected. The set value is the minimum temperature which must be maintained where the limit sensor is located. However, this possibility is not valid for ERZ 3954, but this type has a built-in fixed min. setting of 10°C.

Max. adjustable limitation

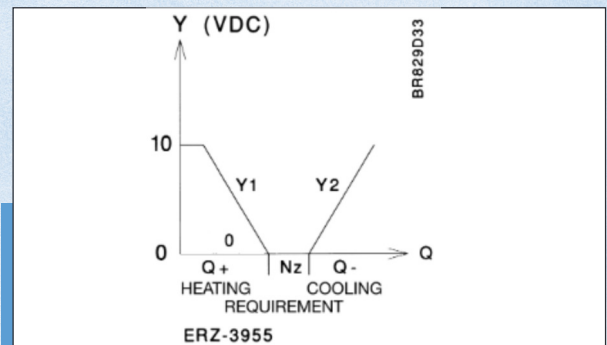
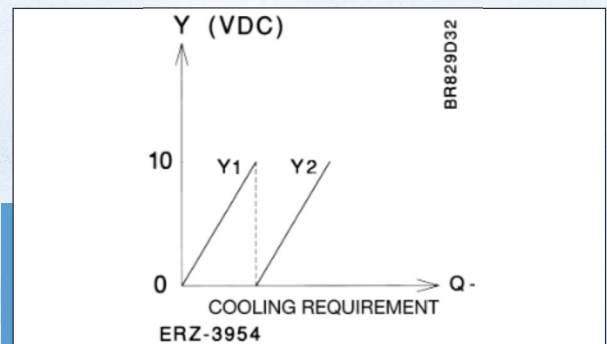
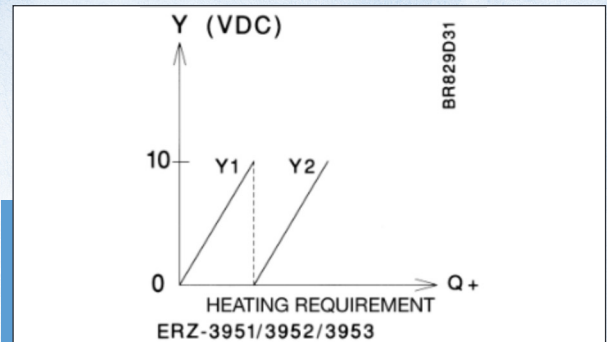
Only valid for ERZ-3953. The setting is made on the front panel.

The other ERZ types have a fixed max. value, (see temperature settings).

Temperature settings

ERZ	Temp. Set	Max. Limit	Min. Limit	Setback Range	Dead Band	Reg.
3951	+5/+40°C	+55°C	0/+30°C	0/+20°C	None	H/H
3952	+35/+105°C	+105°C	+25/+55°C	+30/+70°C	None	H/H
3953	+5/+40°C	+25/+65°C	+10°C	0/+20°C	None	H/H
3954	-10/+35°C	None	-5/+20°C	-5/+20°C	None	C/C
3955	-10/+35°C	+55°C	0/+30°C	-6°C	+0.1/+5°C	C/H

Function diagrams

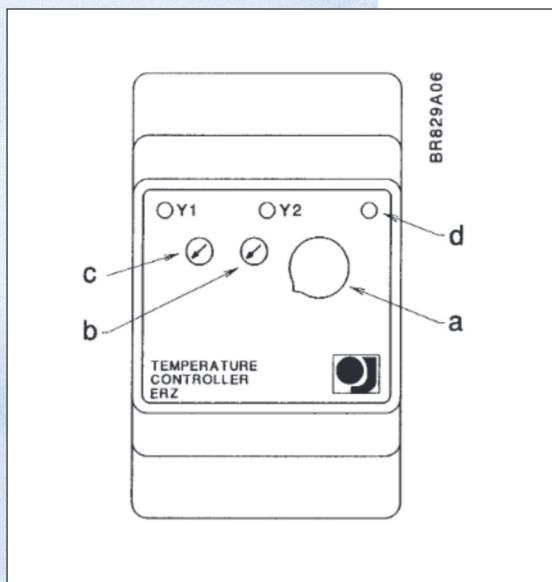


Setback temperature

The setting is made on the front panel. The set value is the reduced temperature setpoint which is obtained when terminals 13 and 14 are short-circuited via an external switch/control. On the ERZ-3955, this setting is not adjustable. On this type the normal setpoint temperature is reduced by 6°C when terminals 13 and 14 are short-circuited.

Frost protection

Frost protection of the heating surface can be provided by removing the jumper between terminals 12 and 13 and connecting a mechanical frost thermostat with a contact action which breaks on detection of a frost condition (or via relay/switches). The heat outputs are then increased to 10V whilst the frost condition exists.



Manual overload of output

The signal outputs Y_1 and Y_2 can be manually adjusted to provide 10V or 0V by turning the temperature setpoint knob to the highest or lowest value. This may be applicable at start up of the system or during maintenance, as the position/movement of valve and damper can be ascertained and checked.

Manual oversteering of output	Lowest temperature scale value		Highest temperature scale value	
	Y_1	Y_2	Y_1	Y_2
ERZ -3951 -3952 -3953 -3954	0V DC	0V DC	10V DC	10V DC
ERZ -3955	0V DC	10V DC	10V DC	0V DC

Settings/LED indications

- Desired temperature pos. a
- Setback temperature pos. c
- Dead band (ERZ-3955) pos. c
- Min./max. limitation, pos. b
- Green LED indicates power ON, pos. d
- Flashing green LED indicates sensor failure, pos. d
- Red LEDs indicate output signal, pos. Y_1 og Y_2
- Light intensity varies from 0-100% at 0-10V
- Red LED short ON, long OFF indicates setpoint positioned for 0V output
- Red LED long ON, short OFF indicates setpoint positioned for 10V output

Parallel displacement of SET-point ERZF-95

By connecting the ERZF-95 the set temperature of the regulator can be parallelly displaced $\pm 5^\circ\text{C}$. The built-in room sensor can be connected to terminal 8 and 9 on the ERZ, if a separate room sensor is not required.

Sensor connection

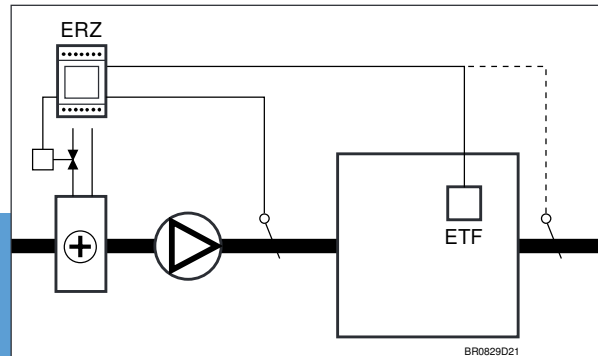
The reference sensor (the regulating sensor) is connected to the terminals 8 and 9. By connecting a sensor (limit sensor) to the terminals 10 and 11 a max. or min. temperature can be set on the front of the regulator (see the section Temperature limitation).

Installation

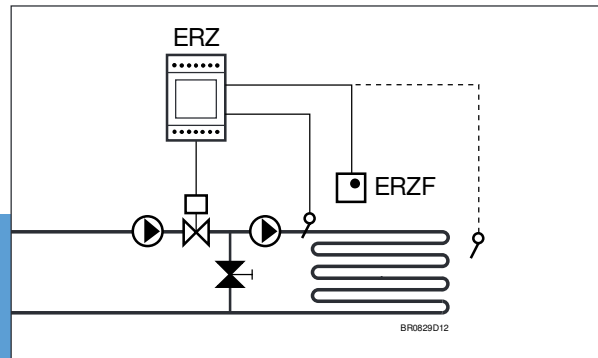
The ERZ is mounted on DIN-rail in control cubicle or on the wall.



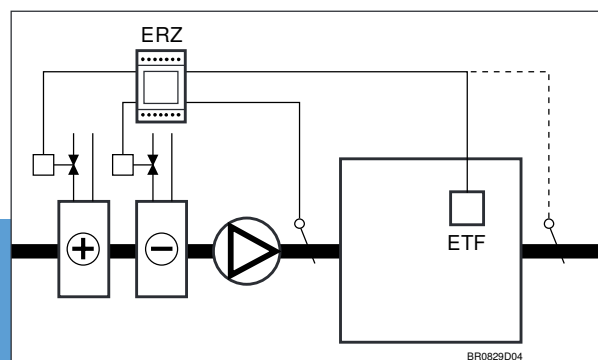
Application (ERZ-types)



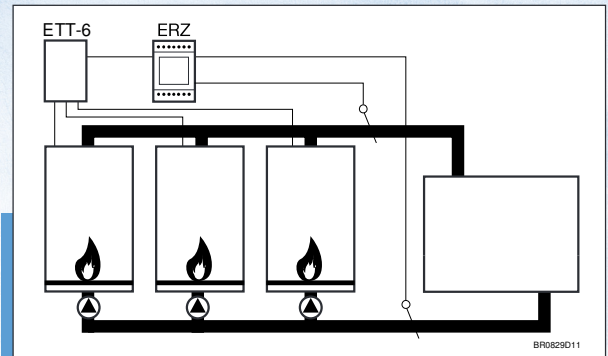
Constant room temperature control with duct sensor for min. limitation of supply air temperature (ERZ-3951)



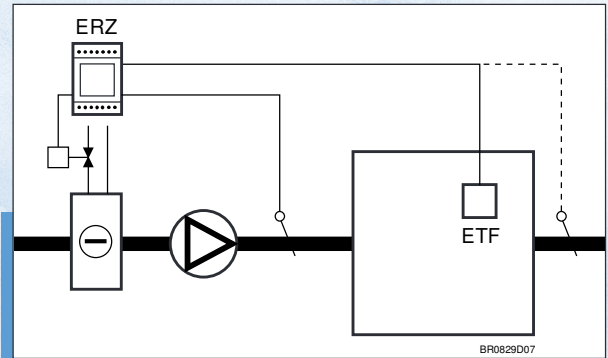
Constant flow temperature or control of floor heating with max. limitation of flow temperature (ERZ-3953)



Constant room temperature control (heating/cooling) with duct sensor for min. limitation of supply air temperature (ERZ-3955)

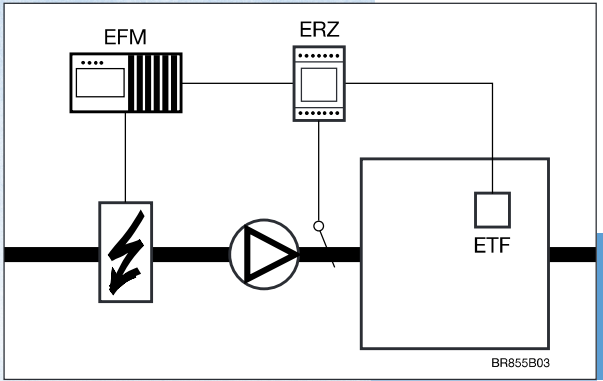


Constant flow temperature control with step control of gas boilers via ETT-6. Sensor in return for min. limitation of return temperature for boilers (ERZ-3952)

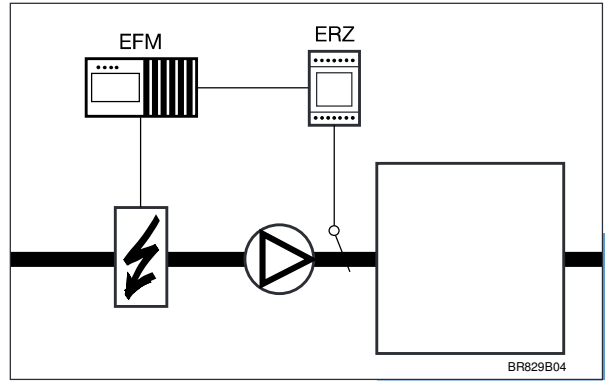


Constant room temperature control with duct sensor for min. limitation of supply air temperature (ERZ-3954)

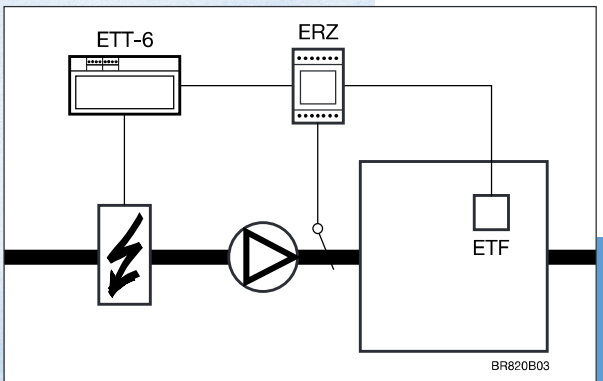
Application examples



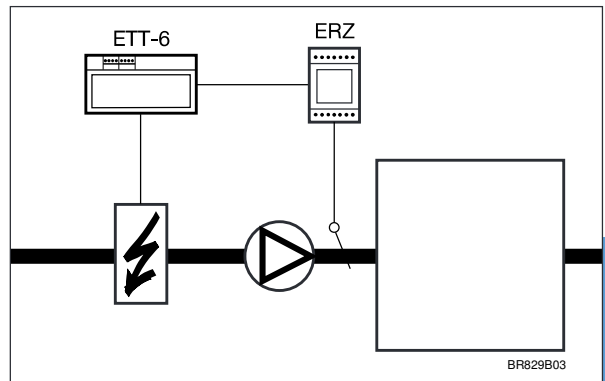
Constant room temperature control with output controller EFM for modulated adjustment of the electrical output and with duct sensor for max. or min. limitation of supply air temperature.



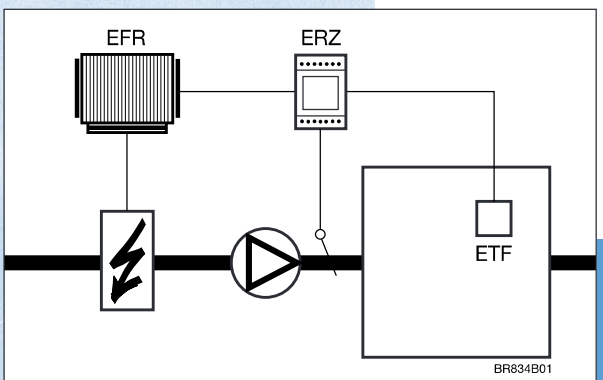
Control of constant of supply air temperature with output controller EFM for modulated adjustment of the electrical output.



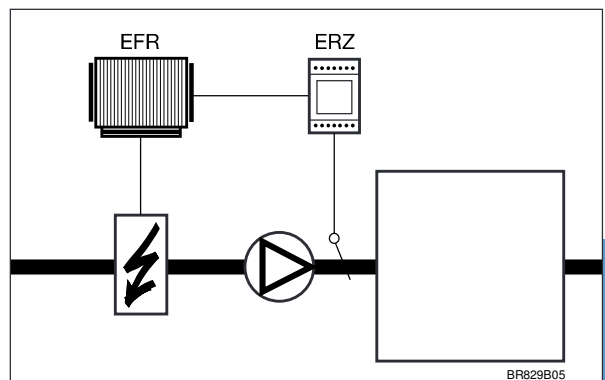
Constant room temperature control with step controller ETT-6 and with duct sensor for max. or min. limitation of supply air temperature.



Constant supply air temperature control with step controller ETT-6.



Constant room temperature control with the output controller EFR for modulated adjustment of the electrical output (3-phase) and with duct sensor for max. or min. limitation of supply air temperature.



Constant supply air temperature control with output controller EFR for modulated adjustment of the electrical output (3-phase).