

CO₂-regulator / ES 899



Combined CO₂ and temperature regulator

**Controls a fan unit according to
temperature and CO₂ level.**

ES 899 is a CO₂ and temperature regulator for a wide range of applications. It has two independent 0-10V output signals. A linear output based on current CO₂ level, and a regulation output designed for control of e.g. damper or EC-motor.

The regulator is available with integrated RS485 MOD-BUS communication (model ES 899 MOD-BUS).

Description:

ES 899 measures CO₂ and temperature levels and controls a fan unit or a damper according to the set points.

It also can be used as independent CO₂ sensor with a linear 0-10V output voltage or as ON/OFF controller with an optional external 0-10V set point relay unit.

The CO₂ sensor uses the widely used ABC algorithm, which ensures long life without calibration. Only the room cannot be used constantly, but must regularly get sufficient airflow to lower the CO₂ to fresh air level.

The required CO₂ and temperature levels are adjusted on the CO₂ and °C knobs.

The speed of the regulator loop is adjustable on the *Air Change Rate* knob.

The light indicates if the CO₂ or the temperature levels in the room have exceeded set levels. The light flashes if the CO₂ level exceeds 50ppm or the temperature exceeds the set point with 1°C. The indicator light will turn into constant light when the level is back to normal.

CO₂ linear output:

The voltage varies linearly with the CO₂ level between 0 and 10V corresponding to 0 and 2000 ppm.

Regulation output:

If the CO₂ level is above the CO₂ set point or the temperature above the temperature set point, the output signal will increase.

If the temperature knob is set to OFF the temperature regulator function is disabled.

To meet requirements from different types of ventilation systems, the speed of the regulator loop can be adjusted with the knob *Air-Change-Rate*. Voltage output range can be selected to 0-10V or 2-10V with a jumper.

Test feature:

It is possible to force the output voltage to 10V by turning the 3 knobs fully clockwise.

The indicator is flashing red while in test function.

Adjustment:

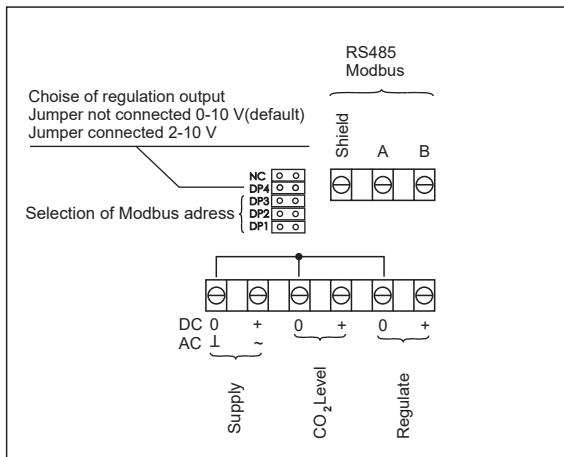
The *Air-Change-Rate* knob adjusts how fast the output voltage increases from 0 to 10V when the CO₂ or temperature set point is exceeded. Turning clockwise will increase the speed of the regulation.

The °C potentiometer sets the desired temperature. If you turn the control to OFF, the temperature regulation will be disabled.

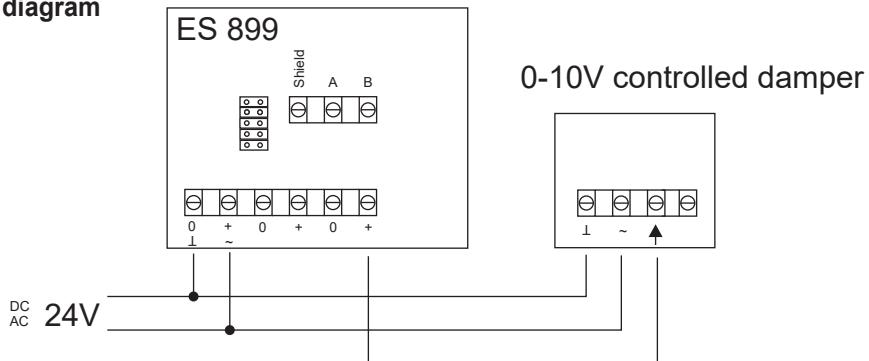
The CO₂ knob sets the desired CO₂ level.

When adjustments are completed, the front cover can be mounted to cover the knobs.

Jumper DP4 selects the output voltage range to 0-10V (default) or 2-10V. When DP4 (No jumper placed) the output is 0-10V (default). If DP4 is closed (jumper in place) the output is 2-10V. NC is place holder for jumper. If jumper is missing entirely the output is 0-10V.



Connection diagram



MOD-BUS (for ES 899 MODBUS model only):

Must be installed in accordance with the MOD-BUS standard. A termination resistor must be installed if required by the standard.

Jumper DP1, DP2 og DP3 are Node-ID selection for ES 899 MOD-BUS.

Node-ID-jumper
(1=Jumper on, 0=No jumper):

DP1	DP2	DP3	Node-ID
1	1	0	2
1	0	1	3
1	0	0	4
0	1	1	5
0	1	0	102
0	0	1	103
0	0	0	104

Available data:

Register adresse	Description
30000	CO ₂ Level(0-2000)
30001	Temperature(-40 +460 = 0-50°)
30002	Regulation output (0-255 = 0-10V)
40000	Air-Change-Rate set point (0-200 = slow-fast)
40001	Temperatur set point (170-270 = 17-27°)
40002	CO ₂ set point (500-1500)

If PLC-adressing is selected, 1 is added to the addresses above.

Technical data:

Supply voltage:	DC: 24V ±10% 3VA AC: 24V ±10% 6,4VA
Measuring range CO ₂ :	0 - 2000 ppm
Accuracy CO ₂ :	±50ppm ved 500 ppm
Measuring range temperature:	0 - 50°C
Accuracy temperatur:	±0,5°C
CO ₂ proportional output:	0-10V, 15mA
Regulation output:	PID based 0-10V / 2-10V, 15mA
RS485 / MOD-BUS:	RTU, 19200 Baud, even parity, 1 stop bit (only MODBUS model)
Operating temperature:	20 - 50°C
Enclosure:	IP 32
Dimensions (HxWxD):	85 x 85 x 35 mm

Maintenance free in households and office environments.



The product complies with the following standard

EN 60730-1

Date: 27/11-2019
Drawing: 950-206649 CO2Sensor_ES899_UK
Drawn by: UP/AH/JEH/df
Rev.: 2.0
Manufactured by: LS Control A/S
Industrivej 12, DK-4160 Herlufmagle

LS CONTROL