HLS 44-SE-P - Room controller

HLS 44-SE-P is a versatile room controller for room-specific temperature and variable air volume (VAV) control. With the standard RS-485 connection, you can connect the controller to any system that supports the Modbus RTU protocol. The bus is galvanically isolated from the other electronics in the controller.

The controller has the following control functions:

- cooling control (1 or 2 stages)
- heating control (1 or 2 stages)
- cooling and heating control (1 or 2 stages for both)
- VAV control
- thermostat-type temperature control

The controller supports actuators that have a 0...10 V or PWM control signal, for example, thermal actuators, dampers and fans. If the room has a fan coil with an EC motor, the controller can control the fan speed directly with the 0...10 V output signal. The controller adjusts the fan speed automatically. Users cannot adjust the speed from the user interface. If the system has 3-speed fans, install a FCRY 3 relay module between the fan and the controller to control the fan speed. One 0...10 V output is reserved for VAV control. The controller can control the reserved output using the cooling signal. You can also configure one 0...10 V output to control a 6-way valve.

The controller detects temperature with an internal or external NTC10 sensor (terminals included). Alternatively, you can connect a door/window contact or a condensation switch to the external temperature sensor terminals.

The controller has day and night operating modes. You can use an external card switch, occupancy detector or the Modbus communication to switch between the operating modes.

You can configure the controller settings using the HLS 44-SE-SER commissioning tool or via Modbus.

Technical specifications

Property	Value
Supply	24 Vac/dc (22...28 V) < 2 VA **Note:** Only the DC functions work when using DC supply voltage. To get full functionality, use AC supply.
Setpoint	
Day mode	18...26 °C, *21 °C, ±3 °C
Night mode	Day mode setpoint range or frost guard function (8...50 °C, *17 °C)
Dead zone	

Property	Value
Day mode	0.2...3 °C, *0.2 °C
Night mode	0...10 °C, *6.0 °C
Proportional band	1...32 °C, *1 °C
Integration time	50...5000 s, *300 s
Internal temperature measurement	
Range	0...50 °C
Accuracy (25 °C)	±0.5 °C
Inputs	
Resistive input	External temperature sensor (NTC 10) input or digital input for door/ window contact or condensation switch
Outputs	
Voltage outputs	4 x 0...10 Vdc, 2 mA
PWM outputs	2 x triac output (switched to 0 V, 24 Vac / 1 A) for thermal actuators. The PWM period is adjustable (20...1200 s, *20 s).
Communication	Modbus RTU
Bus speed	9600*/19200/38400/56000 bit/s
Data bits	8
Parity	none*/odd/even
Stop bits	1
Unit load	1/8 UL
Appliance class (IEC 60664-1)	III
Operating conditions	
Temperature	0...50 °C
Humidity	0...85 %rH (non-condensing)
Storage temperature	-20...70 °C
Wiring terminals	
Type	Tilted screw terminals
Suitable wire	0.2...1.5 mm², stripping length 5 mm
Tightening torque	0.6 Nm
Housing	
Protection class	IP20
Materials	ABS plastic
Mounting	on the wall surface or on a flush mounting box (60 mm hole distance)
Dimensions (w x h x d)	87 x 86 x 33 mm
	* factory setting

Wiring

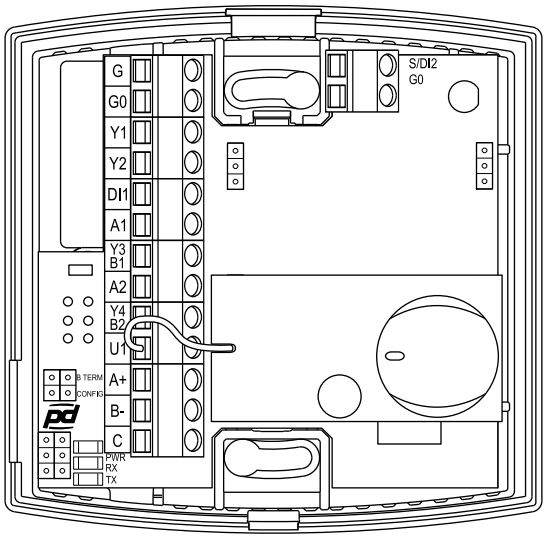
WARNING: Device wiring and commissioning can only be carried out by qualified professionals. Always make the device wirings in de-energised electricity network.

WARNING: This product is appliance class III product according to IEC 60664-1. The product may only be connected to SELV (separated extra low voltage) electricity network.

CAUTION: The product may only be connected to overvoltage category I or II electricity network according to IEC 60664-1. Use external overvoltage protection if the device is connected to the overvoltage category III electricity network.

CAUTION: Extra care should be taken when mixing full and half rectified devices in same AC electricity network. If the outputs are not isolated, connected devices could be damaged.

Important: The supply voltage source must be the same in the transmitter and in the connected devices.



G	24 Vac/dc supply **Note:** Only the DC functions work when using DC supply voltage. To get full functionality, use AC supply.
G0	0 V
Y1	VAV control output, 0...10 Vdc, < 2 mA
Y2	Fan speed output, 0...10 Vdc, < 2 mA
DI1	Digital input, PIR / card switch for day/night mode change
A1	Cooling output, 24 Vac, 1 A (PWM, switched to 0 V)
Y3/B1	Cooling output or 6-way valve control output, 0...10 Vdc, < 2 mA
A2	Heating output, 24 Vac, 1 A (PWM, switched to 0 V)
Y4/B2	Heating output, 0...10 Vdc, < 2 mA
U1	Not in use
A+	Modbus RTU, RS-485.
B-	**Note:** The terminal C is galvanically isolated.
C	

S/DI2	External temperature sensor (NTC 10) input or digital input for door/window contact or condensation switch.
G0	0 V

The nominal tightening torque for wire terminal screws is 0.6 Nm.

Important: Do not use excessive force when you tighten the wiring terminal screws.

CAUTION: Ensure that all covers are closed before you connect the supply voltage to the product. Do not remove the covers when the supply voltage is connected.

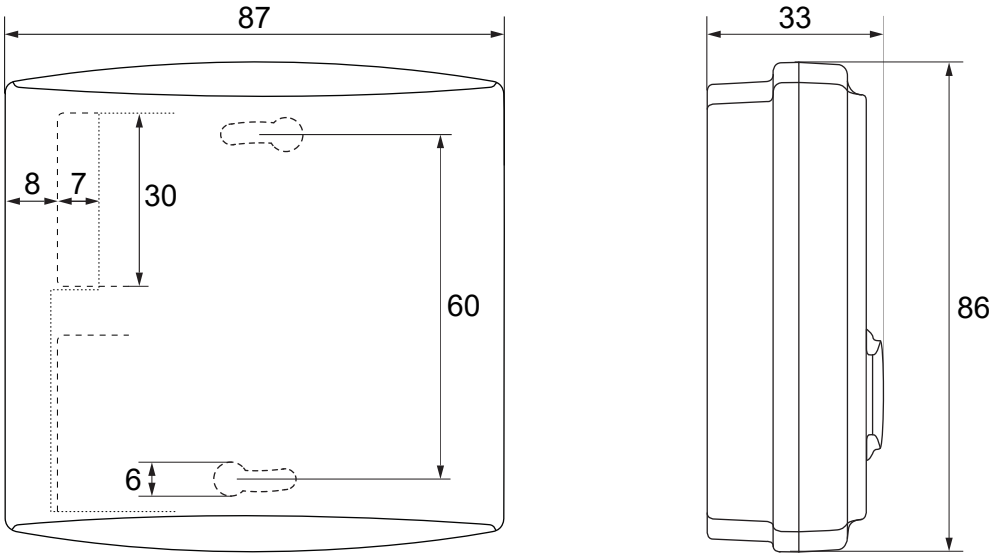
Note: You can use the unused inputs and outputs to transfer other measurement data and control information over the Modbus network.

Ordering information

	Type	Product number	Description
	HLS 44-SE-P	1150440	Modbus room controller
	HLS 44-SE-SER	1150401	Commissioning tool for HLS 44-SE
	FCRY 3	1183070	Fan coil relay, 0...10 Vdc input
	TH 5	1183090	Driver for thermal actuators, 5 outputs

Dimensions

All dimensions are in millimeters (mm).



Supported directives, regulations and standards

All HLS 44-SE-P products support the following EU directives, UK regulations and standards.

EU directives

Standard	Description
2014/30/EU	Electromagnetic Compatibility (EMC).
2011/65/EU	Restriction of Hazardous Substances (RoHS2) Directive.
(EU) 2015/863	Commission Delegated Directive, amending Annex II to Directive 2011/65/EU.

UK regulations

Standard	Description
S.I. 2016 No. 1091	Electromagnetic compatibility regulations
S.I. 2012 No. 3032	The restriction of the use of certain hazardous substances in electrical and electronic equipment regulations

Standards

Standard	Description
EN 61000-6-3:2007/ A1:2011	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.
EN 61000-6-2:2006	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments.