KLU outdoor humidity transmitter

The KLU transmitters are designed to measure and control relative humidity and temperature in demanding circumstances. Their high-quality sensors provide long-term stability and a wide measurement range for humidity (0…100.0 %rH) and temperature (-50.0...50.0 °C). New, longer probe minimizes the temperature measurement error caused by the heat coming from the electronics.

This transmitter has one humidity output and one temperature output. You can select the output signal mode separately for each output during commissioning. The available output signal modes are voltage (0...10 Vdc) and current (4…20 mA).

This transmitter has a P/PI controller. You can use one of the outputs as a control output. The controller can control the output according to one measurement value or according to the maximum selection of all values.

The transmitters options include:

- Display (-N models)
- Relay output (-R model)
- Modbus RTU communication (-M models)
- Second cable gland (-2G models)

The backlit display (-N models) shows both humidity and temperature measurement values at one decimal point accuracy. You can set the display to show humidity, temperature, or both during commissioning.

You can commission all models using the ML-SER commissioning tool. You can also configure the -M model transmitter settings via bus. However, Modbus communication settings must be configured with the ML-SER commissioning tool before you can access the transmitter settings via Modbus network.

The KLU outdoor humidity transmitters are typically used in building automation systems in:

- factories
- warehouses
- parking garages
- spas and indoor swimming pools
- unheated areas

The product lifetime decreases if the environment is very cold (e.g. freezer rooms) or the air contains chemicals (e.g. chlorine at spas and indoor swimming pools). In outdoor applications, install the transmitter under a roof or shelter, or in a weather shield to protect the probe from direct rain and sunshine.

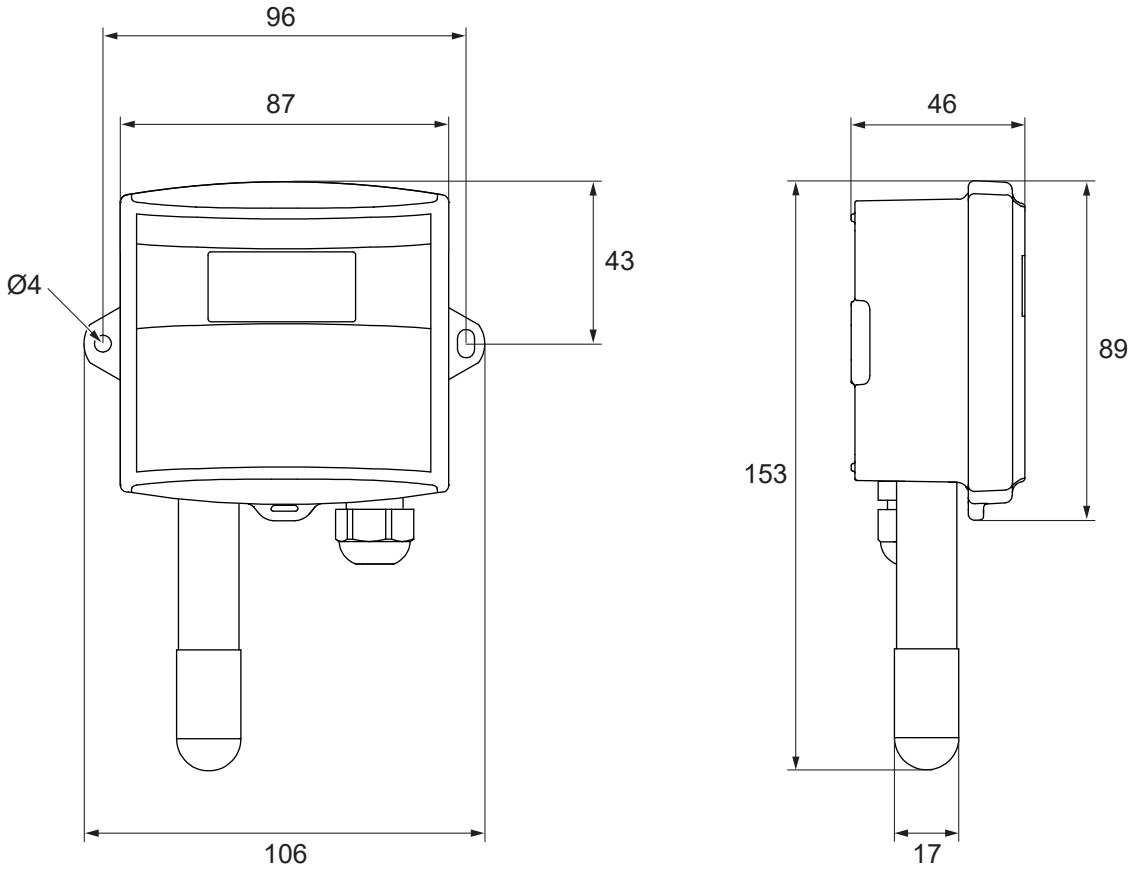
Technical specifications

Property	Value
Power supply	24 Vac/dc (21…28 V)
Power consumption	2 W (all options included)
Humidity measurement	
Range	0…100.0 %rH
Accuracy (25 °C)	±2 %rH (20…80 %rH), max. ±3 %rH (determined based on the voltage output signal of the analogue output)
Long-term stability	±1 %rH / 2 years
Temperature measurement	
Range	-50.0...50.0 °C
Accuracy (25 °C)	±0.5 °C, (determined based on the voltage output signal of the analogue output)
Controller	
Controller type	P/PI
Control functions	The controller can control humidity or temperature.
Analogue outputs	This device has 2 output connectors.
Voltage outputs	
Range	0...10 / 2...10 / 0...5 Vdc, 2 mA
Output signals	Humidity measurement, temperature measurement and control output signal
Current outputs	
Range	4…20 mA ≤ 500 Ω
Output signals	Humidity measurement, temperature measurement and control output signal
Relay output (-R models)	24 Vac/dc, max. 1 A res.
Modbus communication (-M models)	* factory setting
Protocol	Modbus RTU
Interface	RS-485
Bus speed	9600*/19200/38400 bit/s
Data bits	8
Parity	none*/odd/even
Stop bits	1
Unit load	max. 1/4 UL
Display (-N models)	Backlit dot-matrix display, 15.8 x 35 mm **Note:** When the temperature drops below 0 °C, the display fades slightly and the response time increases. The display can stop operating at very low temperatures. It will resume operation when the temperature rises.
Wiring terminals	

Property	Value
Type	Tilted screw terminals
Wire	0.2...1.5 mm^2 (24...16 AWG)
Tightening torque	0.4 Nm
Commissioning tool	the ML-SER transmitter commissioning tool
Appliance class (IEC 60664-1)	III
Operating conditions	
Ambient temperature	-50...50 °C
Ambient humidity	0...100 %rH (non-condensing)
Housing	
Protection class	IP54, cable downwards
Cable gland	1 x M16 (cable diameter 5...10 mm)
Cable gland (-2G models)	2 x M16 (cable diameter 5...10 mm)
Materials	PC and PBT plastic
Probe	
Materials	POM, sintered plastic
Mounting	on a wall with screws, probe and cable downwards
Dimensions (w x h x d)	106 x 153 x 46 mm
Weight	167 g
Warranty	5 years
CE UKCA	Refer to the EU Declaration of Conformity or the UK Declaration of Conformity for compliance information. You can find the declarations on this product's page at www.produal.com.
Company certificates	
Quality management	ISO 9001
Environmental management	ISO 14001

Dimensions

All dimensions are in millimetres (mm).



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: Connect this device to SELV (separated extra low voltage) electricity network only. This device is appliance class III product according to IEC 60664-1.

WARNING: Protect the relay port with an external slow blow fuse with maximum current rating of 1 A. Alternatively, you can limit the power consumption of the connected external circuitry to less than 15 W in both normal operation and failure condition. The relay port is not protected internally against overload.

WARNING: Only connect the relay port to SELV (separated extra low voltage) circuitry.

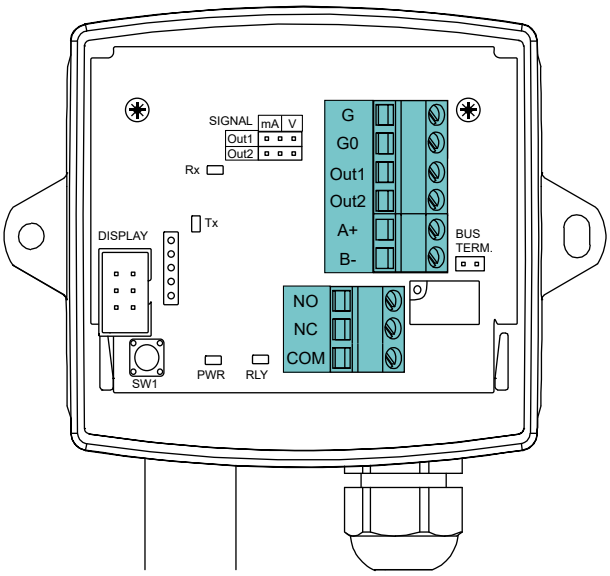
CAUTION: Use single-stranded wires if possible. If you use multi-stranded wires, always install wire end sleeves to the wires to prevent short circuits and ensure secure attachment.

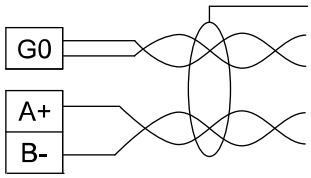
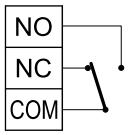
Important: For CE and UKCA compliance, use correctly grounded, shielded cable.

1. Open the cover.
2. Unscrew the strain relief on the cable gland.
3. Route the cable through the strain relief and the cable gland.

   The -2G models have two cable glands. The second cable gland provides an extra entry point for the relay cable in the relay models and for daisy chaining in the Modbus models.

4. Connect the wires to the terminal block and relay output connector according to the table below.



G		Power supply, 24 Vac/dc, < 5 VA
G0		0 V
OUT1		Humidity output / control output
OUT2		Temperature output / control output
A+ *B-*		Modbus RTU, RS-485 (-M models)
NO *NC* *COM*		Relay output, 24 Vac/dc, max. 1 A res. (-R models)

The nominal tightening torque for wiring terminal screws is 0.4 Nm.

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

5. Tighten the strain relief.

Ordering information

	Model	Product number	Description
	KLU	113BA0A0A0	Outdoor humidity transmitter, 1 cable gland
	KLU-N	113BA1A0A0	Outdoor humidity transmitter with a display, 1 cable gland

	Model	Product number	Description
	KLU-R	113BA0A1A0	Outdoor humidity transmitter, relay (24 Vdc, 1 A res.), 1 cable gland
	KLU-R-2G	113BA0A1B0	Outdoor humidity transmitter, relay (24 Vdc, 1 A res.), 2 cable glands
	KLU-N-R	113BA1A1A0	Outdoor humidity transmitter with display, relay (24 Vdc, 1 A res.), 1 cable gland
	KLU-N-R-2G	113BA1A1B0	Outdoor humidity transmitter with display, relay (24 Vdc, 1 A res.), 2 cable glands
	KLU-M	113BA0B0A0	Modbus outdoor humidity transmitter, 1 cable gland
	KLU-M-2G	113BA0B0B0	Modbus outdoor humidity transmitter, 2 cable glands
	KLU-M-N	113BA1B0A0	Modbus outdoor humidity transmitter with display, 1 cable gland
	KLU-M-N-2G	113BA1B0B0	Modbus outdoor humidity transmitter with display, 2 cable glands
	KLU-M-R	113BA0B1A0	Modbus outdoor humidity transmitter, relay (24 Vdc, 1 A res.), 1 cable gland
	KLU-M-R-2G	113BA0B1B0	Modbus outdoor humidity transmitter, relay (24 Vdc, 1 A res.), 2 cable glands
	KLU-M-N-R	113BA1B1A0	Modbus outdoor humidity transmitter with display, relay (24 Vdc, 1 A res.), 1 cable gland
	KLU-M-N-R-2G	113BA1B1B0	Modbus outdoor humidity transmitter with display, relay (24 Vdc, 1 A res.), 2 cable glands
	WS-1	9000520	Weather shield for outdoor installation