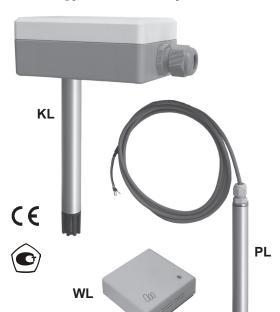
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Description

These sensors have been specially adapted to the needs of the ventilation and air-conditioning sector.

They come in three series (the WL series for wall mounting, the KL series for duct installation and the PL series with a cable for suspension from any location). The KL and PL series are equipped with gauze filters as standard. Other filters are available on request.

Use of capacitive humidity sensor elements is a guarantee of high long-term stability, resistance to dew formation, small hysteresis and good dynamic performance.

User instructions

Install these sensors at a place where characteristic climatic conditions occur. The wall-mounting sensors can be installed on flush-mounted sockets on installation systems and directly onto the wall. Avoid installing them close to heaters or windows or against outside walls.

The sensors with the connection cable can be suspended directly from the cable.

In principle, the sensors do not require any maintenance. However, the dynamic behaviour of the sensor may be affected if it is exposed to too much dust. In this case, clean the sensor element by blowing the dust off. In the case of the KL and PL series, clean the sensors by rinsing them carefully in distilled water. Never touch the highly sensitive sensor element.

Please consult the application instructions for the sensing elements (product info sheet no. A 1) or check with the manufacturer for further information which you need to bear in mind when using humidity sensors with capacitive sensing elements.

Temperature with passive output

Measuring elements to be chosen: NTC; PTC; KTY; LMx35; Pt100; Pt1000; Ni1000; AD592; LM34; BALKO $1k\Omega$; SILICON 2kΩ; SEMICONDUCTOR 559 mVDC @23°C

Thermistors @ 25° C (77° F) $1,8k\Omega$; $2,252k\Omega$; $3k\Omega$; $5k\Omega$; 10kΩ; 1.8kΩ (Type II; III, CSI); 20kΩ; 100kΩ

2) special versions available on request

MELA Sensortechnik GmbH

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Product info sheet no. C 2.6 - "Light Version" **Humidity/-temperature sensors**

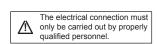
for use in air-conditioning systems, building services management systems and ventilation technology

Technichal Data

measuring range	Humidity		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	measuring range		0100%rh
$at \ 23^{\circ}\text{C} \ (73,4^{\circ}\text{F}) \ \dots \pm 5\%\text{RH} \ (\text{otherwise}) \\ \text{working range} \ \qquad 1590\%\text{rh} \\ \text{influence of temperature} \ \dots \text{typ.} \ \pm 0.2\%\text{RH per °C/°F} \\ \text{minimum air speed (only for PL,KL)} \ \dots \ 1 \text{m/sec, 3ft/sec} \\ \text{Calibration} \ \qquad 1 \text{ point} \\ \text{measuring medium} \ \dots \text{air, pressureless, non-aggressive} \\ \text{output} \ \qquad 010\text{V or } 420\text{mA} \\ \textbf{\textit{Temperature with active output}} \\ \text{measuring range} \ \qquad 050^{\circ}\text{C} \ (32122^{\circ}\text{F})^{2)} \\ \text{sensing element} \ \qquad LM35 \\ \text{accuracy} \ (1040^{\circ}\text{C} \ ; 50104^{\circ}\text{F}) \ \qquad \pm 1^{\circ}\text{C} \ ; \pm 1.8^{\circ}\text{F} \\ \text{calibration} \ \qquad 1 \text{ point at } 23^{\circ}\text{C} \\ \text{output} \ \qquad 010\text{V or } 420\text{mA} \\ \textbf{\textit{Electrical Data}} \\ \text{power supply:} \\ \text{current output} \ (\text{KL}) \ (\text{PL}) \ \qquad 1224\text{V} \\ \text{load} \ \ldots \ \qquad R_{L}(\Omega) = \ \qquad \frac{\text{supply - } 10\text{ V DC}}{0.02\text{ A}} \ \pm 50\ \Omega \\ \text{Current output} \ (\text{WL}) \ \qquad 1530\text{V} \\ \text{max. load} \ \qquad R_{L}(\Omega) = \ \qquad \frac{\text{supply - } 14\text{ V DC}}{0.02\text{ A}} \\ \text{voltage output} \ \qquad 24\text{V AC/DC} \pm 10\% \\ \text{voltage output} \ (\text{duct-version}) \ \qquad 1530\text{V DC/} \ 24\text{V AC} \ \pm 10\% \\ \text{load} \ (\text{voltage output only}) \ \qquad >10\text{kOhm} \\ \text{ambient temperature KL,PL} \ \qquad -20 +80^{\circ}\text{C} \ (-4176^{\circ}\text{F})} \\ \text{WL} \ \qquad -20 +60^{\circ}\text{C} \ (-4140^{\circ}\text{F})} \\ \text{electromagnetic compatibility} \\ \text{Emitted interference} \ \qquad \text{EN } 55011\text{ cl. B} \\ \text{Noise immunity} \ \qquad \text{EN } 50082-2 \\ \text{sensor tube} \ \qquad \varnothing 20\text{mm} \ (\varnothing 0.79^{\circ}) \text{ aluminium} \\ \text{housing} \ \qquad \text{ABS light grey} \\ \text{protective system WL, PL} \ \qquad \text{IP20}$			
$\begin{tabular}{ll} working range & & & & 1590\%rh influence of temperature & & & typ. $\pm 0.2\%RH per °C/°F minimum air speed (only for PL,KL) & & & 1m/sec, 3ft/sec Calibration & & 1 point measuring medium & & air, pressureless, non-aggressive output & & 010V or 420mA $$Temperature with active output$$ measuring range & & 050°C (32122°F)^2)$$ sensing element & & LM35 accuracy (1040°C; 50104°F) & $\pm 1°C; \pm 1.8°F$$ calibration & & 1 point at 23°C output & & 010V or 420mA $$Electrical Data$$ power supply: current output (KL) (PL) & & 1224V load & & R_L(\Omega) = & & supply - 10 V DC & $\pm 50 \ \Omega$$ output & & & 1530V max. load & & R_L(\Omega) = & & & supply - 14 V DC & $0.02 \ A$$ voltage output (duct-version) & & & 24V AC/DC \pm 10\% voltage output (duct-version) & & & & >10kOhm ambient temperature KL,PL & -20+80°C (-4176°F) & & & WL & -20+60°C (-4140°F) electromagnetic compatibility & & & EN 55011 cl. B Noise immunity & & & EN 55011 cl. B Noise immunity & & & EN 50082-2 sensor tube & & & Ø20mm (Ø 0,79") aluminium housing & & ABS light grey protective system WL, PL & & & & IP20 $$$			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		at 23°C (73,4°F) ±5°	%RH (otherwise)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	working range		1590%rh
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	influence of tempe	rature typ. ±0	.2%RH per °C/°F
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	minimum air speed	d (only for PL,KL)	1m/sec, 3ft/sec
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	measuring mediun	n air, pressureless	, non-aggressive
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	output	0	10V or 420mA
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Temperature with	active output	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			°C (32122°F) ²⁾
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			
$\begin{array}{c} \text{output} &$	accuracy (1040°	C; 50104°F)	±1 °C; ±1.8 °F
	calibration		1 point at 23°C
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	output	0	10V or 420mA
$\begin{array}{c} \text{current output (KL) (PL)} & 1224V \\ \text{load} & R_L(\Omega) = \frac{\text{supply - 10 V DC}}{0,02 \text{A}} & \pm 50 \Omega \\ \\ \text{current output (WL)} & 1530V \\ \\ \text{max. load} & & R_L(\Omega) = \frac{\text{supply - 14 V DC}}{0,02 \text{A}} \\ \\ \text{voltage output} & 24V \text{AC/DC} \pm 10\% \\ \\ \text{voltage output (duct-version)} & 1530V \text{DC/24V AC} \pm 10\% \\ \\ \text{load (voltage output only)} & >10k \text{Ohm} \\ \\ \text{ambient temperature KL,PL} & -20 + 80 ^{\circ}\text{C} (-4176 ^{\circ}\text{F}) \\ \\ \text{WL} & -20 + 60 ^{\circ}\text{C} (-4140 ^{\circ}\text{F}) \\ \\ \text{electromagnetic compatibility} & \text{Emitted interference} & \text{EN 55011 cl. B} \\ \\ \text{Noise immunity} & \text{EN 50082-2} \\ \\ \text{sensor tube} & \text{\varnothing 20mm (\varnothing 0,79") aluminium} \\ \\ \text{housing} & \text{ABS light grey} \\ \\ \text{protective system WL, PL} & \text{IP20} \\ \end{array}$	Electrical Data		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	power supply:		
$ \begin{array}{c} \text{current output (WL)} & \dots & \dots & 1530V \\ \text{max. load} & \dots & \text{R}_{L}(\Omega) = & \frac{\text{supply - 14 V DC}}{0.02 \text{A}} \\ \text{voltage output} & \dots & 24V \text{AC/DC \pm}10\% \\ \text{voltage output (duct-version)} & \dots & 1530V \text{DC/24V AC \pm}10\% \\ \text{load (voltage output only)} & \dots & >10k \text{Ohm} \\ \text{ambient temperature KL,PL} & \dots & -20+80 ^{\circ}\text{C} & (-4176 ^{\circ}\text{F}) \\ \text{WL} & \dots & -20+60 ^{\circ}\text{C} & (-4140 ^{\circ}\text{F}) \\ \text{electromagnetic compatibility} & \dots & \dots & \text{EN 55011 cl. B} \\ \text{Noise immunity} & \dots & \dots & \dots & \dots & \text{EN 50082-2} \\ \text{sensor tube} & \dots & \emptyset 20 \text{mm} & (\emptyset 0.79 ^{\circ}) \text{aluminium} \\ \text{housing} & \dots & $	current output	(KL) (PL)	1224V
$ \begin{array}{c} \text{current output (WL)} & \dots & \dots & 1530V \\ \text{max. load} & \dots & \text{R}_{L}(\Omega) = & \frac{\text{supply - 14 V DC}}{0.02 \text{A}} \\ \text{voltage output} & \dots & 24V \text{AC/DC \pm}10\% \\ \text{voltage output (duct-version)} & \dots & 1530V \text{DC/24V AC \pm}10\% \\ \text{load (voltage output only)} & \dots & >10k \text{Ohm} \\ \text{ambient temperature KL,PL} & \dots & -20+80 ^{\circ}\text{C} & (-4176 ^{\circ}\text{F}) \\ \text{WL} & \dots & -20+60 ^{\circ}\text{C} & (-4140 ^{\circ}\text{F}) \\ \text{electromagnetic compatibility} & \dots & \dots & \text{EN 55011 cl. B} \\ \text{Noise immunity} & \dots & \dots & \dots & \dots & \text{EN 50082-2} \\ \text{sensor tube} & \dots & \emptyset 20 \text{mm} & (\emptyset 0.79 ^{\circ}) \text{aluminium} \\ \text{housing} & \dots & $	load	Supply - 10 V	DC ± 50 Ω
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	٠٠/١	0,02 A	
voltage output	current output	(WL)	1530V
voltage output	max. load	R. (O)=supr	oly - 14 V DC
voltage output (duct-version) 1530V DC/24V AC ±10% load (voltage output only)		U),UZ A
load (voltage output only)	voltage output	2	4V AC/DC ±10%
load (voltage output only)	voltage output	(duct-version)	
ambient temperature KL,PL20+80°C (-4176°F) WL20+60°C (-4140°F) electromagnetic compatibility Emitted interference		1530V D	C/24V AC ±10%
WL20+60°C (-4140°F) electromagnetic compatibility Emitted interference	load (voltage outp	ut only)	>10kOhm
electromagnetic compatibility Emitted interference	ambient tempe	erature KL,PL20+	80°C (-4176°F)
Emitted interference		WL20+	60°C (-4140°F)
Noise immunity EN 50082-2 sensor tube Ø20mm (Ø 0,79") aluminium housing ABS light grey protective system WL, PL IP20	electromagnetic co	ompatibility	
sensor tube	Emitted interfe	rence	EN 55011 cl. B
housing ABS light grey protective system WL, PL IP20			
protective system WL, PL IP20	sensor tube	Ø20mm (Ø	0,79") aluminium
protective system WL, PL IP20			
KL (housing) IP54, (sensor) IP20	protective system	WL, PL	IP20
, ,	ŀ	KL (housing) IP54, (s	sensor) IP20

Type versions

Measured variable	Output	WL series wall	KL series duct	PL series rod-haped
F	010 V	FWL2/5	FKL2/5	FPL2/5
rel. humidity	420 mA	FWL3/5	FKL3/5	FPL3/5
K	2 x 010 V	KWL2/5	KKL2/5	KPL2/5
r.h. + temp.	2 x 420 mA	KWL3/5	KKL3/5	KPL3/5
Т	010 V	TWL2/5	TKL2/5	TPL2/5
temperature	420 mA	TWL3/5	TKL3/5	TPL3/5
	Pt100	TWL5/5	TKL5/5	TPL5/5
c r.h. + temp. passive	010 V+T	CWL2/5-X	CKL2/5-X	CPL2/5-X
	420 mA + T		CKL3/5-X	CPL3/5-X
Weight approx.		80g	330	120g



Connection diagram series KL

version 0...10V DC

		1	
	terminals	ranges	
supply	(1-) (2+)	1530V DC	
	(1~) (2~)	24V AC ±10%	
"humidity"	(3) (4+)	010V DC	
"temperature"	(5) (6+)	010V DC	
not galvanic disconnected negative pole (1-) (3) (5) = common			
"temperature"	(5) (6)	passive sensor galvanic disconnected	
shield	(7)		

210 (8,27) 160 (6,3) 25 (0,98) (7,7) (8,27) (9,80) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79) (1,79

version 4...20mA, 12...24V DC (heed load)

	terminals	ranges	
"humidity"	(1-) (2+)	420mA	outputs galvanic
"temperature"	(3-) (4)	420mA	disconnected
"temperature"	(3) (4)	passive sensor	
shield	(5)		

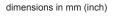
Connection diagram series WL

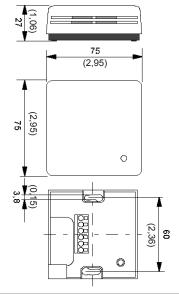
version 0...10V DC

	terminals	ranges	
supply	(1-) (2+)	24V DC ±10%	
	(1~) (2~)	24V AC ±10%	
"humidity"	(3) (4+)	010V DC	
"temperature"	(5) (6+)	010V DC	
not galvanic disconnected negative pole (1-) (3) (5) = common			
"temperature"	(5) (6)	passive sensor galvanic disconnected	

version 4...20mA, 15...30V DC (heed max. load)

	terminals	ranges	
"humidity"	(1-) (2+)	420mA	outputs galvanic
"temperature"	(3-) (4)	420mA	disconnected
"temperature"	(3) (4)	passive sensor	



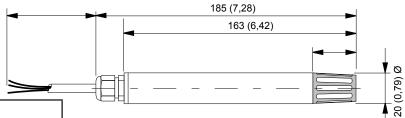


Connection diagram series PL

version 0...10V DC

not galvanic disconnected negative pole (-brown) = common

	wire colour	ranges
supply	*(-brown) (+green)	24V DC ±10%
	(~brown) (~green)	24V AC ±10%
"humidity"	*(-brown) (+white)	010V DC
"temperature"	*(-brown) (+yellow)	010V DC
"temperature"	(blue) (yellow)	passive sensor galvanic disconnected



version 4...20mA, 12...24V DC (heed load)

	wire colour	ranges	
"humidity"	(-green) (+brown)	420mA	outputs galvanic
"temperature"	(-white) (+yellow)	420mA	discon-
			nected
"temperature"	(white) (yellow)	passive sensor	