

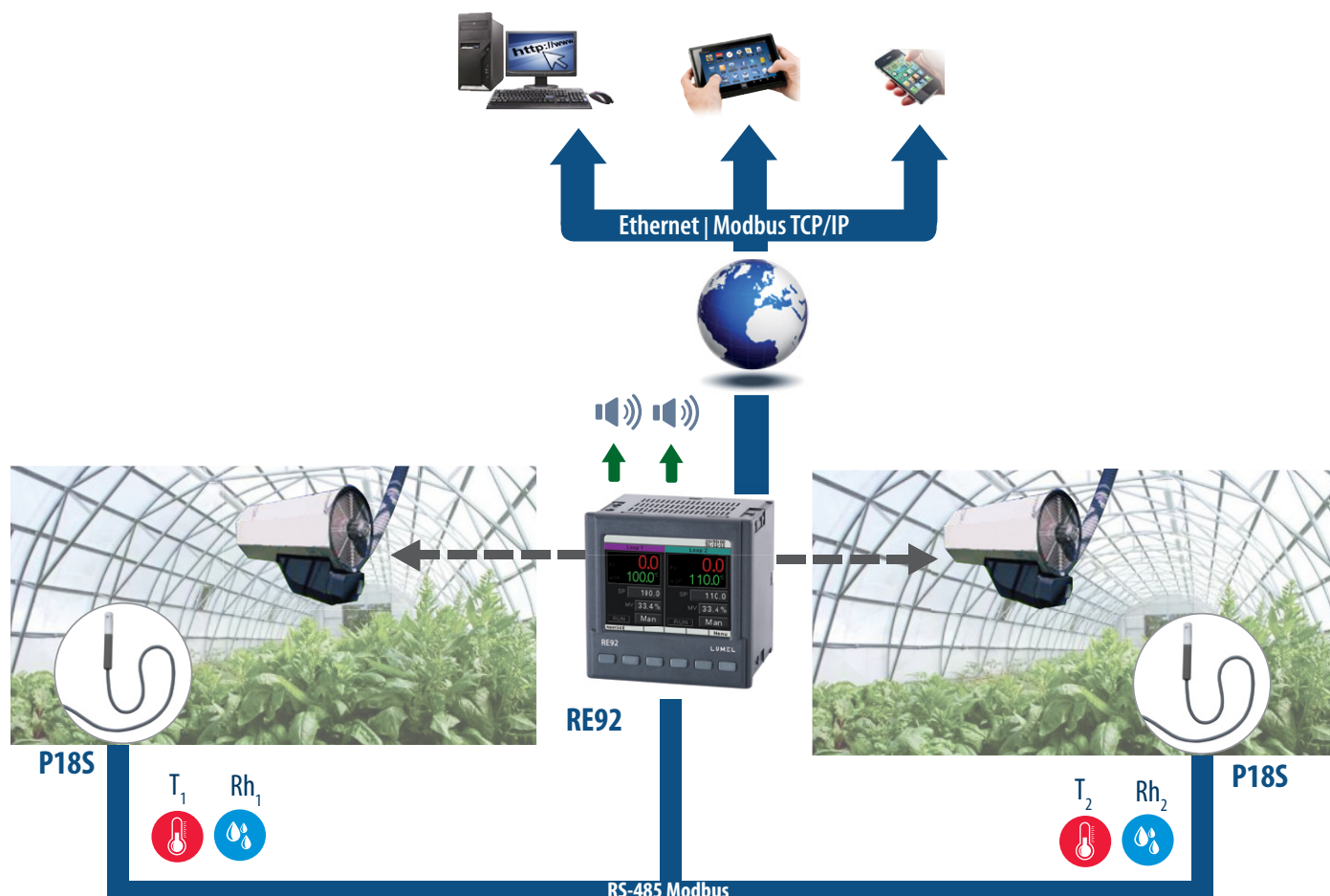
P18S - TEMPERATURE AND HUMIDITY TRANSDUCER

- Measuring probe with a dedicated interface/power cable.
- Calculation of selected physical quantities (dew-point temperature, absolute humidity).
- Reading measurements via the Modbus RS-485 interface.
- Programming of measurement averaging time.
- Compact housing with the possibility of using additional sensor covers.
- Storage of measured and calculated maximum and minimum values.
- Configuration via RS-485 using the free eCon software.



EXAMPLE OF APPLICATION

Control and monitoring of temperature and humidity in greenhouses.



FEATURES

MOD
BUS

RS
485

eCon

INPUT



OUTPUT

RS
485

TECHNICAL DATA

INPUTS

Measured value	Measuring range	Error
Temperature	-30 .. -20 .. 60 .. 80°C	±0.6°C in range 10...40°C ±1.0°C in the remaining range
Relative humidity	0 .. 100%	± 3% for RH = 10 .. 90% ± 5% for RH in the remaining range

DIGITAL INTERFACE

Interface type	Transmission mode	Baud rate
RS-485 Modbus RTU	8N1, 8N2, 8E1, 8O1	2.4; 4.8; 9.6; 19.2; 38.4; 57.6; 115.2 kbit/s

EXTERNAL FEATURES

Overall dimensions	86 × 12.5 mm
Weight	0.1 kg
Protection grade	ensured by the casing: IP65

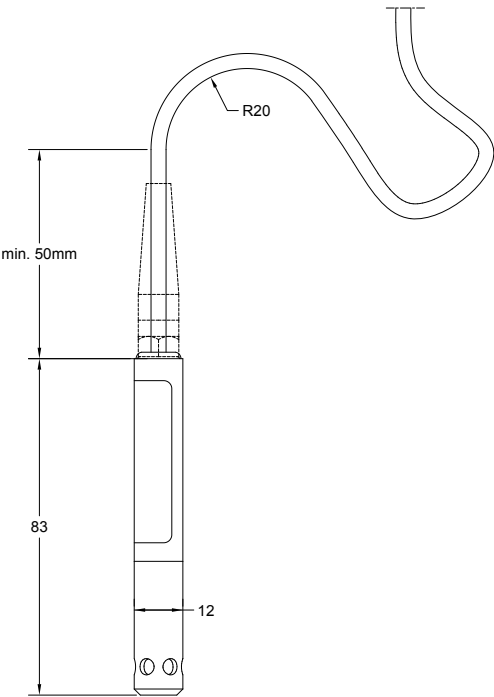
RATED OPERATING CONDITIONS

Supply voltage	9 .. 28 V d.c.	Power consumption < 0.5 VA
Temperature	ambient: -20...23...60°C	
Humidity	< 95%	inadmissible condensation
Operating position	any	in application not exposed to water contact
	sensor chamber towards the earth	in application exposed to water contact
Preheating time	15 minutes	

SAFETY AND COMPATIBILITY REQUIREMENTS

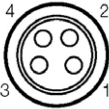
Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	podstawowa	acc. to EN 61010-1
Pollution level	2	
Installation category	III	
Maximal phase-to-earth operating voltage	50 V	
Altitude a.s.l.	< 2000 m	

EXTERNAL DIMENSIONS



ELECTRICAL CONNECTION

The transducer has a 4-wire non-detachable cord which is 2.5 or 10m long or a detachable M8 socket with a 2-meter long wire (depending on the version code) used for supplying and connecting the RS-485 interface:




non-detachable cord (color of the cord)	M8 socket (terminal number)	cable with M8 plug (color of the cord)	Function
			
green	3	blue	Positive power cord VCC
yellow	1	brown	Negative power cord GND
brown	4	black	RS-485 "B" signal
white	2	white	RS-485 "A" signal

ORDERING CODE

P18S -	XX	XX	X	X
Connection way:				
socket-plug M8 . . . , 2 m wire (included)	00			
wire 2 m	02			
wire 5 m	05			
wire 10 m	10			
Version:				
standard	00			
Language:				
polish-english		M		
Acceptance tests:				
without extra quality requirements				0
with quality inspection certificate				1
with calibration certificate				2

Order example:

The code **P18S-02000M1** means transducers with 2 m wire, in standard version, polish-english language version, with quality inspection certificate.

Order code	Design	Name	Construction	Features	Typical application
20-015-00-00011		Membrane filter	Casing made of PCV, membrane of teflon. Laminated by a film. Pore size: 1 µm	Mean filtration effect. Maximal temp.: up to 80 °C Response time: t10/90:15 s	Building automation. In rooms with low pollution.
20-015-00-00007		Filter made of teflon	Sintered teflon. Pore size: 50 µm	High chemical resistance Maximal temp.: up to 180 °C Response time: t10/90:14 s	Drying process in chemical applications.
20-015-00-00003		Filter made of sintered bronze	Sintered bronze. Pore size: 60 µm	High mechanical resistance. To co-operate in high pollution environments. Applied at small air humidity Response time: t10/90:10 s	Agricultural applications.

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EVERYTHING COUNTS

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P18, P18D TEMPERATURE AND HUMIDITY TRANSDUCER
P18L TEMPERATURE OR HUMIDITY TRANSDUCER

FEATURES:



eCon

MOD
BUS

RS
485

INPUT:



OUTPUTS:

4...20
mA

only P18, P18D

0..10
V

only P18, P18D

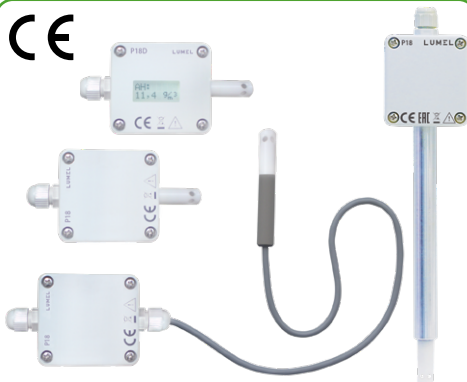
RS
485

only P18, P18D

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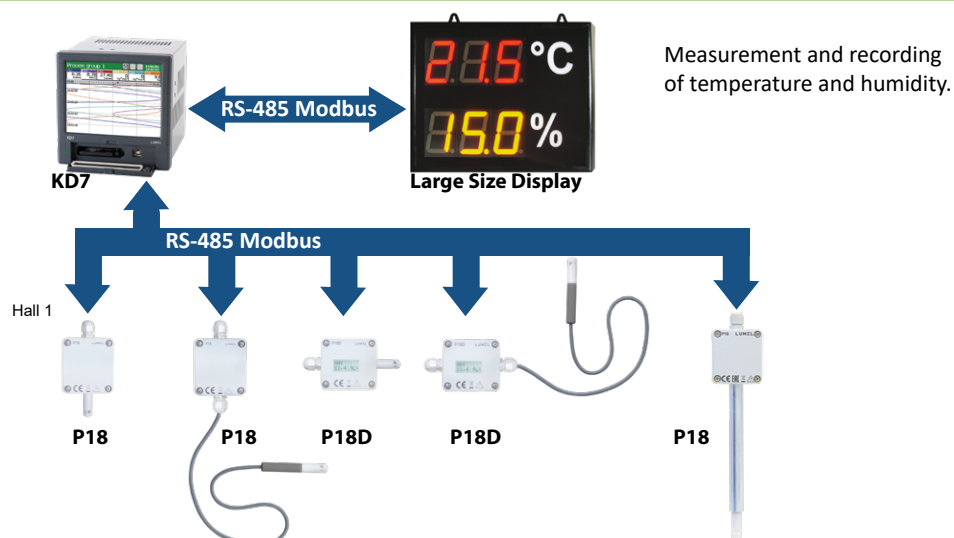
P18, P18D

- Built-in temperature and humidity sensor or with probe on 0.5 m wire or with an extended sensor.
- Calculation of selected physical quantities (dew-point temperature, absolute humidity).
- Interface RS-485 Modbus.
- 2 analog outputs 0/4...20 mA or 0...10 V (option).
- Standard d.c. current or d.c. voltage output signal
- Storage of measured and calculated maximum and minimum values
- Visualisation of measured value on a LCD display (only P18D).

P18L

- Built-in temperature and humidity sensor.
- Supply from current loop
- 1 analog output 4 ... 20 mA.

EXAMPLE OF APPLICATION



INPUTS

Input type	Measuring range	Error
Temperature	P18, P18D: -30 .. -20 .. 60 .. 85°C P18L: -30 .. -20 .. 60 .. 85°C	+/- 0.5%
Relative humidity	0 .. 100%	+/- 2% for RH = 10 .. 90% +/- 3% for RH in the remaining range

OUTPUTS

Output type	Admissible load resistance	Remarks
4 .. 20 mA	$R_{load} \leq 100 \Omega$	for P18/P18D
	$R_{load} \leq 500 \Omega$	P18L
0 .. 10 V	$R_{load} \geq 1 k\Omega$	only P18/P18D

DIGITAL INTERFACE (only P18/P18D)

Interface type	Transmission mode	Baud rate
RS-485 Modbus RTU	8N1, 8N2, 8E1, 8O1	4,8; 9,6; 19,2; 38,4; 57,6; 115,2 kbit/s

EXTERNAL FEATURES

Overall dimensions	38 × 58 × 118 mm	38 × 58 × 265 mm - version with extended sensor
Weight	125 g	270 g - version with extended sensor
Protection grade	ensured by the casing: IP65	
Fixing	on a wall	

RATED OPERATING CONDITIONS

Supply voltage	P18, P18D	9 .. 24 V d.c./a.c	input power < 0.5 VA
	P18L	19 .. 30 V d.c.	input power < 1 VA
Temperature		ambient: -20...23...60°C	
Humidity		< 95%	
Operating position		any	
		in application not exposed to water contact	
		sensor chamber towards the earth	
		in application exposed to water contact	
Preheating time		15 minutes	
Air flow rate		≥ 0.5 m/s (P18/ P18D)	
		≥ 2 m/s (P18L)	

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution level	2	
Installation category	III	
Maximal phase-to-earth operating voltage	50 V	
Altitude a.s.l.	< 2000 m	

CONNECTION DIAGRAM

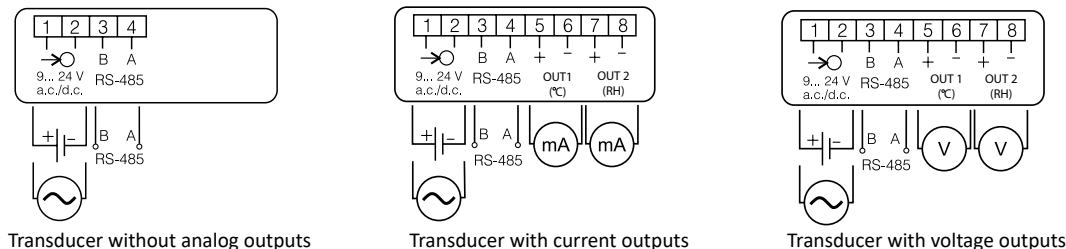


Fig. 1 Connection way of electric signals – P18, P18D.

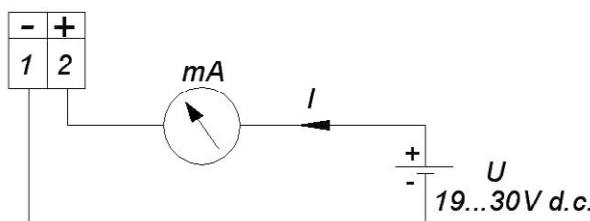
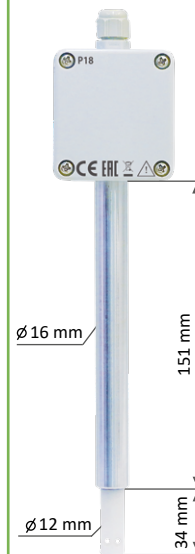


Fig. 2 Connection way of electric signals – P18L



Code	Description
P18 000M0	Temperature and humidity transducer P18 without analog outputs; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements
P18 100M0	Temperature and humidity transducer P18 2x analog output 4-20mA; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements
P18 200M0	Temperature and humidity transducer P18 2x analog output 2x 0-10V; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements
P18D 000M0	Temperature and humidity transducer P18D with LCD display, without analog outputs; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements

Code	Description
P18D 100M0	Temperature and humidity transducer P18D with LCD display, 2x analog output 4-20mA; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements
P18D 200M0	Temperature and humidity transducer P18D with LCD display, 2x analog output 0-10V; sensor on the housing; documentation and descriptions in Polish and English version, without any extra requirements
P18L 000	Temperature and humidity transducer P18L, built-in temperature and humidity sensor, supplied from a current loop, 1 x analog output 4 ... 20 mA; without any extra requirements

Table 1

Order code	Design	Name	Construction	Features	Typical application
20-015-00-00011		Membrane filter	Casing made of PCV, membrane of teflon, laminated by a film. Pore size: 1 µm	Mean filtration effect. Maximal temp.: up to 80 °C Response time: t10/90:15 s	Building automation. In rooms with low pollution.
20-015-00-00007		Filter made of teflon	Sintered teflon. Pore size: 50 µm	High chemical resistance Maximal temp.: up to 180 °C Response time: t10/90:14 s	Drying process in chemical applications.

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