GUARANTEE

The manufacturer guarantees the correct functioning of the following devices under normal use for a period of 12 months:

- Transducers (ZP) with the following serial numbers:

  . . . . . .

- System PPS-60L; serial number: . . . . . .
- System PPS-60R; serial number: . . . . . .

Production date: . . . . . .

Zaklad Elektroniczny
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Gliwice '99

REMOTE SYSTEM FOR MEASURING MOISTURE AND TEMPERATURE IN DRYING CHAMBERS
PPS-60

USERS MANUAL

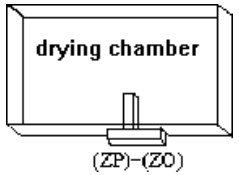
1. Description

This device is used for constant monitoring of moisture and temperature of wood in drying chambers. It measures wood moisture, air humidity and temperature.

2. Available types of the system

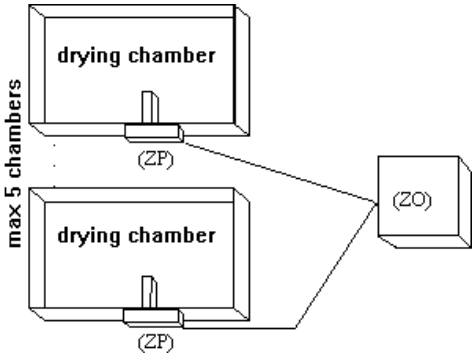
There are two types of the system:

- System PPS-60L



It is located on the wall outside of the drying chamber, in one casing and consisting of one transducer (ZP) and one receiver (ZO) housed together.

- System PPS-60R



Only the transducers (ZP) are located on the wall outside of the drying chamber and the receiver (ZO) can be located up to 100m from the chambers. Five transducers (ZP) can be connected to one receiver (ZO).

3. Transducers (ZP)

One set of transducers (ZP) consists of:

- three wood moisture transducers (PD),
- one air humidity transducer (PP),
- one temperature transducer (PT).

4. Receiver (ZO)

The receiver is a digital volt-meter with a variable characteristic depending on the parameter being measured, wood type and temperature.

The results are given on a LCD. System PPS-60R has one additional switch allowing to choose one of 5 drying chambers.

5. Technical data

Range:

- wood moisture 8 % - 60 % moisture contents,
- air humidity 30 % - 90 % RH,
- temperature 20°C - 120°C

Accuracy:

- wood moisture
  - within 8 % - 28 % ± 2 %,
  - above 28 % ± 2% + 10 % of measured value
- air humidity
  - within 40 % - 70 % ± 3 %,
  - in rest of the range ± 4 %.
- temperature
  - in the whole range ± 1°C.

Connection:

- Transducers (ZP) - Receiver (ZO) max. 100 m, a 6 wire cable

Number of wood types 11

Power (only in the receiver) 220V, 50Hz, 0.1 A

11. Resolution

The results are given with the resolution of 0.1. However during normal operation the last digit may change even after several tens of seconds. This is caused by electromagnetic interference and the changes in temperature of electronic elements

If ordered the resolution can be set to 1 by the manufacturer.

12. Additional information

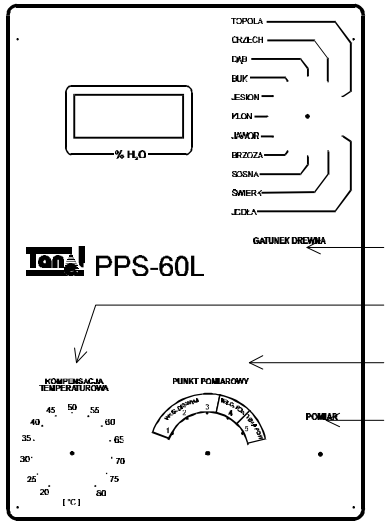
- The voltage in the wires connecting the receiver (ZO) with the transducers (ZP) is within a safe range of 15V. Nevertheless the wires should be protected against water, cutting etc.
- The needles and the connectors should be cleaned from time to time with a fine grinding paper.
- The receiver (ZO) protected with two fuses:
  - power supply fuse B1 - 200 mA,
  - connecting line fuse B2 - 200 mA.
- The maximum operating temperature for the sensors is 120°C. Exceeding this temperature can damage the sensors and invalidates the guarantee.
- The system is delivered with 100 pcs of A1 sensors.
- All of the wires in the drying chamber should have silicon insulation.

13. Regulation and repairs

To check, regulate or repair the system should be sent to the producer.

WARNING:

Before any repairs and regulations the System should be disconnected from the power supply !



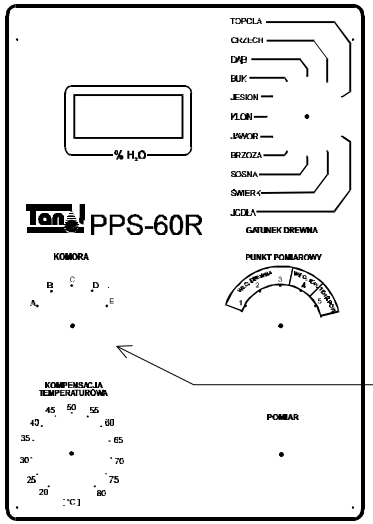
"WOOD TYPE"

"TEMPERATURE COMPENSATION"

"MEASUREMENT POINT"

"POWER"

10. Measurements with the system PPS-60R



The measurements with the system PPS -60R can be done in the same way as with the system PPS-60L. The only difference is that in PPS-60R there is an additional switch allowing to choose one of 5 drying chambers.

"DRYING CHAMBER"

6. Installation of the system PPS-60L

The system PPS-60L is delivered fully assembled. The user should only install it on the side wall of a drying chamber.

The air humidity and temperature stand should be put in the drying chamber in such a place where the results would be representative for the whole chamber. It should not be placed for example near heating pipes or in places where air convection is suppressed.

The temperature inside the casing has some influence on the accuracy of the results so we recommend:

- in the summer - protect the casing from excessive sunlight,
- in the winter - provide insulation or heating from the chamber.

The ED 2030 casing has a high IP65 protection level against all atmospheric conditions.

7. Installation of the system PPS-60R

The system PPS-60R consists of two parts:

- transducers (ZP),
- receiver (ZO).

The casing with the transducers (ZP) should be installed in the same way as the system PPS-60L.

The receiver should be placed max 100 m from the transducers.

The connection diagram is in the receivers casing..

8. Final preparations

Temperature measurement does not require any preparations and can be done at any time.

A single use chemical sensor is used to measure air humidity. Every time before each drying cycle an old sensor should be replaced with a new one. Using the same won't damage the device, it is however decreasing the accuracy of the measurement.

Replacing the sensor:

- release 4 mounting screws,
- pull the old sensor out,
- slide the new one in,
- screw the mounting screws tight.

The system PPS-60 uses chemical sensors type A1.

Measuring of wood moisture requires the electrodes to be installed earlier. To install the electrodes you should do the following:

- in the wood intended for drying you should drill two holes ϕ 3.8 - 4.0 mm and about 25 mm deep (or up to the half of the width of the timber if it is less then 50 mm wide). The holes should be 25 mm apart. A line drawn between the two holes should be perpendicular to the fibres in the wood. The holes should be in the middle of the timber or at least 50 cm from the end.

- disconnect the wires from the needles and nail the needles into the holes (for example if the holes are 20 mm deep you should nail the electrodes to the depth of about 22 mm).

- connect the wires with the needles

- repeat the above actions for each of the remaining two measuring points.

Pay special attention not to mix the wires between pairs.

NOTE:

The cables are single wire and not double wire because it increases the accuracy. For this reason the wires should not be placed close parallel one to another.

9. Measurements with system PPS-60L

Temperature measurement:

- set the switch "MEASUREMENT POINT" into "AIR TEMP.",
- press "POWER",
- read the result on the LCD.

Air humidity measurement:

- set the switch "MEASUREMENT POINT" into "AIR HUM.",
- press "POWER",
- wait until the result is stable,
- read the result on the LCD.

NOTE:

During temperature and air humidity measurements the switches "TEMPERATURE COMPENSATION" and "WOOD TYPE" have no influence on the results.

Wood moisture measurement

- set the switch "WOOD TYPE" correctly,
- set the switch "TEMPERATURE COMPENSATION" accordingly to the temperature in the drying chamber,
- set the switch "MEASUREMENT POINT" into "WOOD MOIS. 1" or "WOOD MOIS. 2" or "WOOD MOIS. 3",
- press "POWER",
- read the result on the LCD.

WARNING:

If the wood moisture is above 15 % the result is given instantly however if the result is below 15 % you should wait several tens of seconds (still pressing the "POWER" button) until the result is stable.