Device for non-contact measurement of the temperature of a hydrogenerator rotor comprises a lens, two pulse generators, a first frequency divider, four AND gates, three digital comparators, a position sensor, a position setpoint unit, and a clock distributor. Two registers, a digital adder, two flip-flops, a speed control unit, a display, n separate infrared sensors of an infrared receiver, a data preparation unit, a switch, a buffer register, a first counter, two controlled amplifiers, a video control unit, a voltage generator, a memory unit, a differentiator, and a NOT gate. The output of the first frequency divider is connected to the inputs of the buffer register, the first counter, and the first input of the video control unit, whose second and third inputs are connected, respectively, to the outputs of the first and second controlled amplifiers, whose first inputs are connected to the output of the voltage generator, and whose second inputs are connected, respectively, to the first and second outputs of the memory unit. The input digital bus of the memory unit is connected to the output digital bus of the first counter, the fourth input of the video control unit, together with the first input of the data preparation unit, is connected to the output of the switch, whose input digital bus is connected to the output digital bus of the buffer register, whose input digital bus is connected to the outputs of n separate infrared sensors of the infrared receiver. The output of the data preparation unit is connected to the computer circuits; the output digital bus of the position setpoint unit is connected to the first input digital bus of the first digital comparator, whose second input digital bus, together with the input digital buses of the first and second registers, is connected to the output digital bus of the position sensor. The output of the first digital comparator is connected to the first input of the first AND gate, whose second input is connected to the first output of the second flip-flop, and whose output is connected to the first input of the first flip-flop, whose second input is connected to the second output of the second flip-flop. The output of the second AND gate is connected to the second input of the data preparation unit; the second input digital bus of the second digital comparator is connected to the output digital bus of the speed setting unit, and its first input digital bus is connected to the output digital bus of the digital adder, whose first and second input digital buses are connected, respectively, to the output digital buses of the first and second registers, whose inputs are connected, respectively, to the first and second outputs of the clock distributor. The third output of the clock distributor is connected to the second input of the second flip-flop; the output digital buses of the first and second registers are connected, respectively, to the first and second input digital buses of the third digital comparator, the output of which is connected to the first input of the third AND gate, the second input of which is connected to the output of the second digital comparator, and whose output is connected to the first input of the second flip-flop. The output of the first flip-flop is connected to the first input of the second AND gate, whose second input is connected to the output of the first pulse generator, and whose output is connected to the inputs of the first frequency divider, the voltage generator, and the switch; the output of the first digital comparator is connected to the input of the differentiator, whose output is connected to the second input of the clock distributor and to the input of the NAND gate, whose output is connected to the first input of the fourth AND gate, the second input of which is connected to the output of the second pulse generator, and whose output is connected to the first input of the clock distributor. It includes a fourth digital comparator, a third register, a second frequency divider, a second counter, and a decoder, wherein the output digital bus of the position sensor is connected to the first input digital bus of the fourth digital comparator and to the input digital bus of the third register. The output digital bus of the decoder is connected to the second input digital bus of the fourth digital comparator, whose output is connected to the second input of the third register and to the input of the second frequency divider, whose output is connected to the second input of the second counter, the first input of which, together with the first input of the third register, is connected to the output of the first digital comparator. The output digital bus of the second counter is connected to the input digital bus of the decoder, whose output digital bus is connected to the input digital bus of the indicator.