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USE OF ATMEGA MICROPROCESSORS IN THE DEVELOPMENT OF MEASURING INSTRUMENTS IN WARP YARNS

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The Atmega328 microprocessor is an 8-bit, 28-pin AVR microchip based on RISC Architecture. EEPROM memory is 1KB, SRAM memory is 2KB. There are 8 pins for ADC operations. All pins are PortA (PA0 - PA7). It also has 3 built-in timers, two of which are 8-bit timers and the third is 16-bit timers.

The device was designed with the help of a microprocessor AtMega328, as well as a sensor DHT22.

Keywords: Strip, Moisture, Atmega328, Automation, Digital, Microprocessors, Technology, Measurement, EEPROM Memory, SRAM Memory

The production of high-quality, world-class fabrics in textile enterprises and their delivery to the finished product, the introduction of new techniques and technologies, the comprehensive solution of issues of full and efficient use of local raw materials play an important role in the development of light industry. The textile industry is one of the leading industries in the country. Since Uzbekistan's independence, the textile industry, along with all other sectors, has been growing.

Today, the textile industry of our country is not only a rapidly developing industry, but also a sector that is steadily increasing exports, attracting foreign investment and modernizing and radically modernizing production processes. Automation of measurements allows you to quickly return many parameters, increase the requirements for the accuracy and accuracy of measurements (while limiting the capabilities of the operator in the reception and processing of large amounts of data). The transition to the construction of digital measuring instruments has led to the creation of automated measuring systems using microprocessors. Non-programmable devices and compatible measuring systems based on digital technologies are automated measuring instruments. Independent, non-programmable devices conform to a solid program and are designed to measure specific signal parameters and key properties. These instruments perform only a portion of the measurement operations, such as determining the polarity of the input signal automatically and setting the measurement limits. Flexible measuring systems allow you to systematically reconstruct different systems to measure and modify different physical quantities. In this case, the hardware part of the measuring system does not change. According to the structural design, the interface can be divided into three dimensions: microprocessor and computer. The most important part of flexible measurement systems are computing systems, which are created by combining computers, measuring instruments and information display devices into a single multidimensional system. The combination of communication between the computer and other nodes is provided by a combination of hardware, software and

design tools. A device that connects a computer to measuring instruments or any other system is called an interface. Sometimes the concept also includes the software of an automated system. Typically, computing complexes use standard devices (modules) connected to common trunk standard interfaces. However, in order to solve the new meteorological problem, it is enough to change some of the modules and software used as a source or receiver of information.

In microprocessor-based compatible measurement systems, all nodes are connected directly to the microprocessor line. Built-in microprocessors perform maintenance operations, provide various measurement modes and detect a number of signals or electronic parameters. The operation of such devices is carried out in accordance with the programs stored in the memory device.

We found it appropriate to use the Atmega328 microprocessor to develop a microprocessor system to determine the degree of moisture absorption in the looms.

The Atmega328 microprocessor is an 8-bit, 28-pin AVR microchip based on the RISC Architecture. EEPROM memory is 1KB, SRAM memory is 2KB. There are 8 pins for ADC operations. All pins are formed by PortA (PA0 - PA7). It also has 3 built-in timers, two of which are 8-bit timers and the third is 16-bit timers. It operates at a voltage of 3.3 V to 5.5 V, but we usually use it as a 5 V non-standard.

The digitalization of the Atmega328 microprocessor and the configuration of the output ports are necessary to create a scientifically sound moisture measurement system. We used a DHT22 (Digital Hummidity Temperature) sensor to determine the ambient temperature. The data from this measurement will increase the accuracy of the measurement in digital form. To do this, it is necessary to know the technical characteristics of the pins of the microprocessor.

Conclusion

1. The device was designed with the help of microprocessor AtMega328, as well as a sensor DHT22.

2. Electronic topological microcircuit of the measuring instrument was designed and developed.

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