CompactPCI CPU Board CP605

➤ # Reliable and future-ready

The perfect vacation photo depends on the subject, but is also influenced by the development and exposure of the film and the paper processing. Today, digital wholesale finishing systems, with corresponding computer, performance process analog and digital orders with automatic image correction and then expose them. High-performance CPU cards from Kontron provide the functionality and flexibility for the control units.

Wholesale finishing systems for brilliant pictures

AgfaPhoto GmbH develops, produces, and markets laboratory devices, software and consumer materials for the professional handling and processing of photographic images, as well as film and digital storage media for photographs. The AgfaPhoto wholesale finishing system d-ws was developed at AgfaPhoto's Munich plant, along with compact digital devices, known as d-labs. The digital high-performance d-ws system consists of several individual components, such as the high-performance scanner d-scan.20, the high-performance printer d-print.20, and the digital processing components d-gate input and d-gate output.

Wholesale finishing systems like the d-ws are used in large photo labs for the efficient processing of analog and digital orders. These orders typically include images on photo paper, CDs with digitized image data and other imaging products such as greeting cards and photo albums.

In order to meet the end user's expectations in terms of picture quality, the image data is processed in the d-ws using a special image processing algorithm. It is also possible to reduce the annoying "red eye" effect and to reproduce skin tones that are "warmer" or "colder" according to taste.

The high performance of the scanner d-scan.20 is due to Kontron's CPU-Boards

In the photo lab, the orders pass through a wide variety of production steps. Film orders come to the lab in order envelopes that are first sorted according to certain criteria, such as the desired format of the pictures. The films are then stuck together in splicers to form large rolls, and developed in film developing machines. The film rolls are then digitized on the d-scan.20 high-performance scanner and processed with the d-TFS (Digital Total Film Scanning) image optimization software and other optional processing algorithms. The corrected image data files are then provided to the d-print.20 high-performance printer, which exposes them onto roll paper at a speed of 49.4 m/min. Ideally, the paper rolls are developed on the VSP 50 paper processing machine, which is directly connected to the printer, then cut into individual photos and packed in order envelopes at adjacent cutter-packer stations. Finally, the order envelopes are sorted and delivered.

The CP605 CompactPCI CPU card that controls the laser printer essentially corresponds to the standard version

In order to assure efficient processing through the many different steps, it is important that each individual machine and, thus, every single part,

functions reliably. Therefore, AgfaPhoto decided to use various versions of the CP605 CompactPCI CPU from Kontron in their d-ws components d-scan.20 and d-print.20.
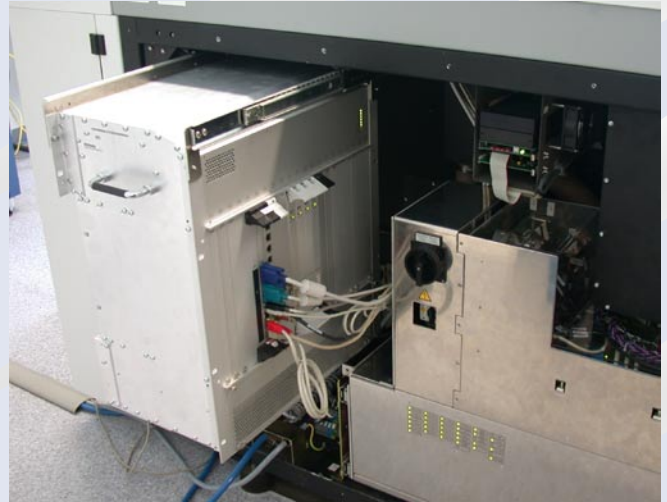
The unit's high-performance scanner contains two Kontron CP605 CPU cards

High performance and passive cooling

The core of the CP605 CPU board from Kontron is the Intel Pentium 4 processor, which is available in both desktop and mobile variants. The mobile Pentium 4 M processor used by AgfaPhoto operates at a frequency of 2.2 GHz.

Despite the high performance, passive cooling is sufficient for all processor variants. This enables the mechanically precise design solution for the processor/chipset cooling bloc. Cleverly designed thermal management prevents the processor from overheating and ensures trouble-free operation of the CP605, even under unfavorable housing and system conditions. Integrated into the Pentium 4 is an on-die sensor, which controls the temperature and reduces the processor frequency depending on the measured values. Furthermore, Kontron has equipped the board

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with an additional external temperature sensor, which measures the temperature on the housing and lowers the processor frequency if a threshold value is exceeded; it also lights an LED on the front panel to indicate to the operator that the threshold has been reached.

Above all, the performance of the board is demonstrated by the speed with which the memory is accessed. The highly integrated Intel 845GV chipset, designed for the Pentium 4, provides a frequency of 400 or 533 MHz on the DDR-RAM for maximum data throughput. The board supports up to 2 GB RAM, of which up to 1 GB is soldered and can be enhanced with up to 1 GB through a 200 pin SODIMM slot. For communication, the CP605 CPU board has three Ethernet channels, of which two are Gigabit Ethernet and one is Fast Ethernet, plus five USB ports, three being USB2.0.

High-performance printer d-print.20 with CPU-Boards from Kontron.

A maximum of four additional COM ports are available for serial connections. Moreover, the board offers excellent graphics functions, two IDE interfaces, PS/2 interfaces, a CompactFlash slot, and a PMC plug. All interfaces connect to the J3 to J5 backplane plugs for rear I/O solutions. Thus, customer solutions can be built wireless, space-saving, and secure over the backplane via Gigabit Ethernet.

Industry standard avoids failure

Reliability was the most important consideration for AgfaPhoto in choosing a suitable CPU board. Since any failure of the wholesale finishing systems means an additional expense for AgfaPhoto's customers, failures must be kept to a minimum. Therefore, it was important not to use control components from the consumer market, but rather industrial components, which guarantee high reliability and can handle 24-hour operation. This is particularly important because the systems are not designed with built-in redundancy for reasons of cost.

"So far, the systems with Kontron cards have run flawlessly and been stable for our customers," says Jürgen Brunner, Project Manager Wholesale Finishing with AgfaPhoto in Munich. And Josef Uhlmann, responsible for the selection of hardware components at AgfaPhoto in Munich, adds, "The performance of the CP605 is still not exhausted; the CPU is designed with the future in mind, so that we are by no means limited to the current service level. Besides that, Kontron guarantees the long-term availability of the CPU cards, which is very important for us and our customers."

The CP605 CompactPCI CPU card that controls the laser exposer is essentially the standard version with a customized configuration of processor performance, memory size in combination with an on-board hard disk, and some special software features. The unit's high-performance scanner even contains two Kontron CP605 CPU cards. One CP605 is designed strictly for controlling the machine under Linux and preparing the data for the laser printer. This CPU has been modified by Kontron to include a storage module with DVD drive and 3½" hard drive. The CPU and storage module form a compact unit, which can be removed as a complete module for service.

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Kontron delivers this expandable module to AgfaPhoto fully mounted and tested. It is then simply inserted into the control rack and thus connected to the backplane. The second CP605 operates under Windows and is responsible for all the image processing in the scanner. The machine control runs under Linux, because it is more economical and more secure than a Windows operating system in terms of cost and real-time capability. For the image processing, however, it is necessary to stay with Windows 2000, because it would be too expensive to convert the existing image processing software to Linux.

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