Realise automation solutions with u-control 2000 and u-create web:

faster, more intelligently, and more securely

Let's connect.

In view of the advance in worldwide networking, rising flexibility in production plants and growing data and information exchange, Weidmüller presents u-control 2000 with u-create web - a new, more flexible automation solution for the plant and machinery manufacturer.

The control unit hardware u-control 2000 is based on a powerful dual-core ARM A9 processor with a clock frequency of 624 MHz and an internal memory of max. 512 Mbyte.
The working memory for the application program is 64 MB and up to 32 GB of data and information can be also stored on an external micro-SD memory card. The control unit is equipped with a battery-buffered real-time clock. The replaceable battery, as well as the plug-in station for the memory card, are not visible below the flap of the connections for the power supplies for the control unit and the u-remote modules.

Different interfaces are available for communication and for engineering u-control 2000.
The engineering software is started with the aid of a browser via one of the two RJ45 sockets. Once programming of the system is concluded, data can be exchanged via this Ethernet TCP/IP interface with a higher-level control unit or with an ERP system. The second RJ45 socket is used for future extensions, e.g. for building up a field bus system with MasterSlave function. The control unit also includes a USB connection (below the service flap) which also allows programming or calling up diagnostic data. This is advantageous if u-control 2000 is already installed in an application and is connected with other systems. A CAN interface has already been integrated for future communication with intelligent components.

The 24 V DC power supply for u-control 2000 feeds both the control hardware, as well as separate inputs and outputs for up to a max. of 64 different u-remote modules. These are flange-mounted on the right side of the u-control 2000.

The system can also be used for safety applications. Here the u-remote safety-power-feed modules come into use, which put machines into a safe state independent of the control unit. The necessary non-safety signals for the application program are transmitted via the u-remote backplane bus to u-control 2000.

The special feature of u-control 2000 is the fact that it has two autonomous CPU cores. A non-real-time capable Linux operating system with a Weidmüller proprietary engineering tool u-create web runs on one processor. A real-time PLC operating system on the second processor executes the application program. Both CPU cores are shielded from each other by security technology and transmit data to one another via trust zones. This allows separate software updates to be performed independently for the two systems, as required. To comply with mounting security requirements, a TPM chip is integrated in the device. TPM stands for Trusted Platform Module and protects against unauthorised software updates, as well as modified software or software add-ons.

Open and manufacturer-independent web technologies (HTML5, CSS3, JavaScript) were used as a basis for the development of the engineering software u-create web. For the user, the browser becomes the application platform and allows flexible system configuration, parameterization and programming in accordance with IEC 61131-3.

Laborious installation of the engineering tool is not required, as this software is already integrated in the control unit. Thanks to the web technologies, the control unit together with an extremely wide range of different hardware, as well as the software, can be monitored, programmed and updated from anywhere in the world via a direct connection (u-control 2000 hardware) or an indirect connection (Internet). The only requirement is an HTML5-compliant browser.

With today's control units, engineering (configuration, parameterization and programming) is usually done with a separate software package that has to be installed on a PC with the Microsoft Windows operating system. This fact leads to independence from the version of the operating system used, not only in development, but also for the entire lifecycle of the automation solution and therefore the machine.

Unlike the existing systems, u-create web offers increased flexibility in this regard, based on standardised, web-based technologies (HTML5 etc.) with engineering software that is already integrated into the embedded hardware and is license-free.

In concrete terms, the key to ensuring device independence lies in relocating the engineering tool to these web technologies. The engineering software can be accessed directly via a network or via a server/cloud, with the additional option of programming without any hardware connected. This web-based engineering makes the user both independent of location (factory or office), platform (Linux, Windows etc.) and also browser (Internet Explorer, Firefox, Chrome etc.).

The engineering tool integrated in the control unit is designed such that programming is based on the worldwide valid IEC 61131-3 standard for programmable logic controllers (PLCs).
The commands and structures are known from programming in automation technology.
After a brief period of familiarisation with the intuitive drag & drop operation, the first projects can be implemented immediately with the web-based engineering tool. The standard IEC 61131-3 programming languages are available. In the beginning the Function Block Diagram (FBD) will be supported. The command library corresponds to that of the PLCopen command library. In the future ST program components can also be transformed into function blocks for various requirements and for understanding the control program.

The engineering tool will be automatically adapted to different displays in the future (responsive design) and thus enable optimal operation of the web-based interface.

Another focus is the issue of security. u-create web was developed taking the latest security standards into account (e.g. IEC 62443) and secure access using the HTTPS protocol or also via a VPN connection on the Internet.

Additional software functions improve protection of its own application software against from unauthorised access. The encryption of the individual software functions is possible, as well as encryption of the entire application program. The data on the external memory can also be stored in encrypted form. This therefore makes simple copying of data and the loss of your own IP considerably harder.

Besides the aforementioned unique selling points, above all the aspect of the compact design and direct coupling of different u-remote modules are worthy of note. A broad product portfolio of simple digital and analogue input/output modules through to complex functional modules, such as IO Link, RS 232/422/485, SSI, allow a universal solution for different machines and plants.

An important noteworthy product feature of u-create web is the retroactive installation of industry software applications for additional functions. The control unit can therefore be adapted to meet the particular requirements of the customer application.

The software apps significantly expand the application of u-create web. In the future the u-control standalone solution will become an automation solution, incl. EtherCAT field bus master for connecting decentralised u-remote I/O stations. With the aid of OPC UA, a large number of u-control controllers can transmit semantic information, as well as controlling and regulating an application either in a central or distributed mode.

In creating graphical operating and observing elements for HMIs, u-view will also be available to the machine builder as an optional software packet. All these software apps can be installed on the u-control 2000 hardware in every phase of the project – a unique combination on the market.

The use of open web technologies offers new and flexible approaches in the context of industry 4.0 and simplifies M2M communication at a production site and also across sites across the world.

u-control 2000 is suitable for new plants, as well as for use as a retrofit in existing machines and plants. The Weidmüller automation solution toolbox u-mation - is equally relevant to both machine and plant operators wanting to make the most of the new web technologies. u-create web is impressive with its independence of the platform and browser used, based on manufacturer-independent technologies and open standards. This makes the new automation solution interesting for a broad user base.

In the future, users can realise their automation projects with u-create web faster, more flexibly, more intelligently and on the basis of the latest and open web technologies.

Digitalisation

- Combination of automation and digitalisation in order to optimise production output
- Leading edge thanks to data-based business models such as application-specific Analytics solutions for the detection of anomalies and Predictive Maintenance
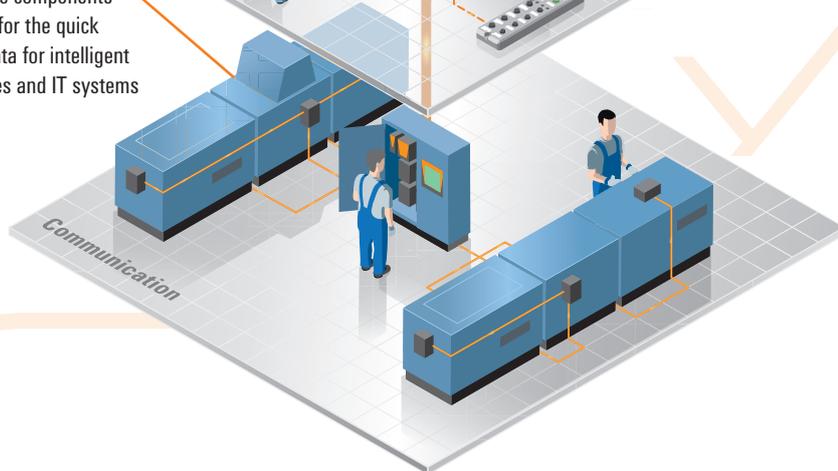
Automation

- Open, platform-independent automation toolbox u-mation
- Optimally tailored components u-control, u-create, u-remote and u-view for customised automation solutions

Communication

- Communication-capable components such as PROtop allow for the quick provision of process data for intelligent networking of machines and IT systems

www.u-mation.com

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