

Compact controllers in mobile automation



B-Plus is a specialist in automation of mobile machinery. The company offers compact solutions for a variety of applications, particularly for the construction sector.

(Source: Adobe Stock)

Compact controllers are indispensable in the world of mobile automation. The primary advantage of such controllers lies in their efficiency. They are streamlined for essential functions, eliminating unnecessary features that are not required for the specific application. For many applications, the functionalities provided by these controllers are sufficient, making the need for expensive and complex systems superfluous. The low programming effort and reduced hardware costs contribute to cost savings compared to conventional control elements. Compact design enables to use the controllers in environments with limited space or for applications that require discreet integration.

B-Plus provides expertise in areas such as industrial engines and truck applications using CAN technology supporting CANopen, J1939, and Isobus higher-layer protocols. The company offers engineering services ranging from the development of custom solutions to the integration of control systems. The flexible controllers are adaptable to the requirements of various applications.

Applications

B-Plus offers a range of compact controllers designed for use in harsh environments of mobile working applications. Housings with protection ratings of up to IP69K ensure safe outdoor use. The controllers can be used for simple automation tasks and are scalable to handle more complex processes. This adaptability makes them a valuable tool for manufacturers in the (special-)vehicle construction sectors. From small construction equipment such as vibrating plates to large truck-mounted concrete pumps, they control hydraulic systems and other functions. Municipal vehicle manufacturers use them to control hydraulic lifting and tipping mechanisms, while fire trucks rely on them to manage operations for booms, pumps, and more.

Programming and system integration

The integration of compact controllers into existing systems is straightforward, thanks to standardized interfaces and protocols such as CANopen, J1939, and Isobus for CAN-based communication.

The compact controllers are shipped with the included STM32CubeIDE development environment. The latter integrates a C-based development environment with a built-in compiler and debugger, along with debugging hardware such as ST-Link V2. The software API (application programming interface) with numerous programming examples allows also newcomers to C programming to navigate high-level programming.

The Mobile Automation Toolbox simplifies software flashing. It enables the identification of connected compact controllers and provides a flash tool for application download and upload. Additionally, CSV parameter files can be downloaded to FRAM, and both FRAM and Flash can be uploaded. The toolbox supports such USB-to-CAN adapters as PCAN-USB from Peak-System and CANfox from Sontheim.

As a service, B-Plus is guiding customers throughout the entire project. This includes consulting on selecting the right controller and providing expert support during implementation. Customized developments are possible as well. In addition to its own developments, B-Plus offers products from its partners ifm, Hydac, and Topcon. These partnerships enable to provide a versatile product range for specific customers' needs.

Actuators and displays

In addition to controllers, the company also provides a range of actuating elements including various CAN-connectable joysticks, keypads, and buttons. For example, the keypad modules are flexible input devices designed ▶

Compact controller series

The B-CANcubeX series includes five members. The IP54-protected B-CANcubeNano offers two digital I/Os (inputs/outputs) and a CAN interface. It measures 50 mm x 30 mm x 39 mm. For example, it can serve as a gateway device between EIA-232 (also known as RS-232) and CAN networks. The device is based on a 16-bit microcontroller.

Further devices implement a 32-bit microcontroller and increased I/O functionality. The B-CANcubeMicro (IP67) and B-CANcubeMini (IP54) provide respectively two CAN interfaces. B-CANcubeMini Sealed and CANcubeMini Sealed Plus are equipped with three CAN ports and are protected according to IP67/IP69k categories. The largest family members come with dimensions of 128 mm x 94 mm x 41 mm. The CANcubeMini Sealed Plus is equipped with 8/8 parametrizable analog I/Os, four digital outputs, two EIA-232 ports, and one EIA-485 interface. All named products have an operating temperature range of -40 °C to +85 °C.



B-CANcubeX series (Source: B-Plus)

Electronics, ifm, Topcon Opus, and TTControl/Hydac. These displays enable visualization of machine data in demanding environmental conditions allowing for monitoring and management of complex processes while machine's operation.

Conclusion

In an era of rapid digitalization and automation, compact and flexible control systems are becoming increasingly important. Their advantages are availability, robustness, reduced programming effort, and possibility for custom adaptations for simple and complex automation tasks. B-Plus continually invests in product development to adapt controllers to changing market requirements and enhance their performance and reliability. Available from stock, small controllers enable rapid integration into projects, which is important for time-critical applications.

B-Plus is exhibiting their products and solutions at this year's Bauma trade show in Munich, hall A3, stand 313. ◀



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for harsh environments. The proportional joystick B-Drive Cab Control enables flexibility and control with intuitive handling. Furthermore, the manufacturer offers a selection of displays from the companies Crosscontrol, Deep Sea

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