

MATCUBE

Description

Reminiscent of the structure of a Matador modular system, the present invention presents a method and device that utilizes externally similar modules.

These modules are characterized, among other things, by the fact that they use only certain, uniform housing dimensions. These modules may differ in terms of function, but are always used in the same way, as the two basic functions of power supply and data communication are implemented in a similar way. The modules can be linked via a connector system, tapping their own supply voltage and serial lines and looping them through to the next module. The I2C serial data connection is preferred, allowing appropriate addressing of the modules. Of course, other communication structures such as PCI bus, KNX bus, etc. can also be used. In the solution presented here, data communication is implemented as a serial 2-wire connection, such as I2C or PCI bus, but can be implemented in any standardized or non-standardized configuration.

Only the basic properties of a bus with extensible addressing need to be implemented.

Alternatively, a separate addressing bus can be used in addition to the data and power bus.

As a further alternative, a parallel data bus with different bit widths can be used in conjunction with an addressing bus.

One or more wireless modules can also be installed as an intermediate or final link in a Mat-Cube chain structure so that external modules that are difficult or impossible to access via plug or cable connections can be integrated into a process.

All common radio connections can be considered "wireless".

Initial situation

Today, electronic hardware components are widely available and affordable. This has made it much easier to develop custom solutions for a wide variety of tasks. Complex hardware solutions are often available that already have a microprocessor architecture integrated or can be easily combined with one, such as the Arduino family.

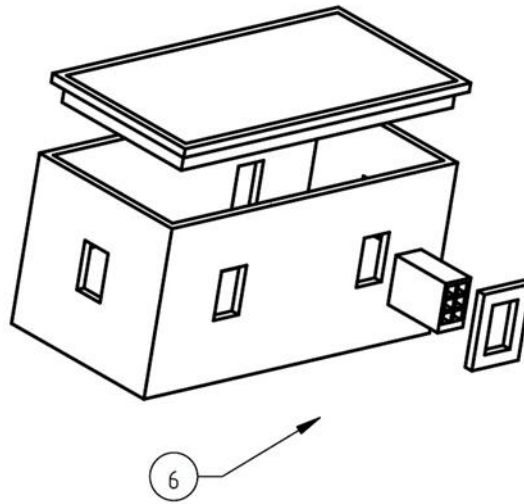
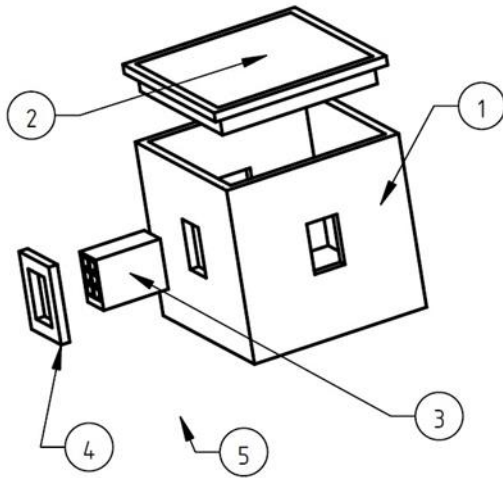
There are also numerous platforms that provide software solutions free of

charge. Für eine konkrete Anwendung jedoch ist meist eine Expertise für die Hard- und Software-Komponenten notwendig.

The trend from the analog domain to the digital domain is clearly visible, which is one reason why hardware has become cheaper. While previously knowledge of sensors, amplifiers, and analog-to-digital converters was necessary, many sensors today are already equipped with ADCs and a serial interface. However, their operation requires even more software knowledge. Various adjustments are often necessary, registers must be defined, etc., meaning that very high levels of technical expertise are still required.

Most users don't have this knowledge and aren't interested in acquiring basic technical knowledge. A quick and efficient solution is paramount. This allows users to devote themselves entirely to a solution concept. Detailed knowledge is often distracting and thus hindering. A clear structure and distinction between the system components and the actual problem is therefore particularly important and should be pursued.

The parts in drawings 1-6 of the MatCube system can be produced using various methods (e.g., 3D printer or laser cutter). The box and lid can be modified as needed. A practical example would be additional holes in the box for connecting peripheral devices for a microcomputer (mouse, monitor, USB stick, etc.).



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