Jetter
automation

Automation Solutions for Agricultural Engineering

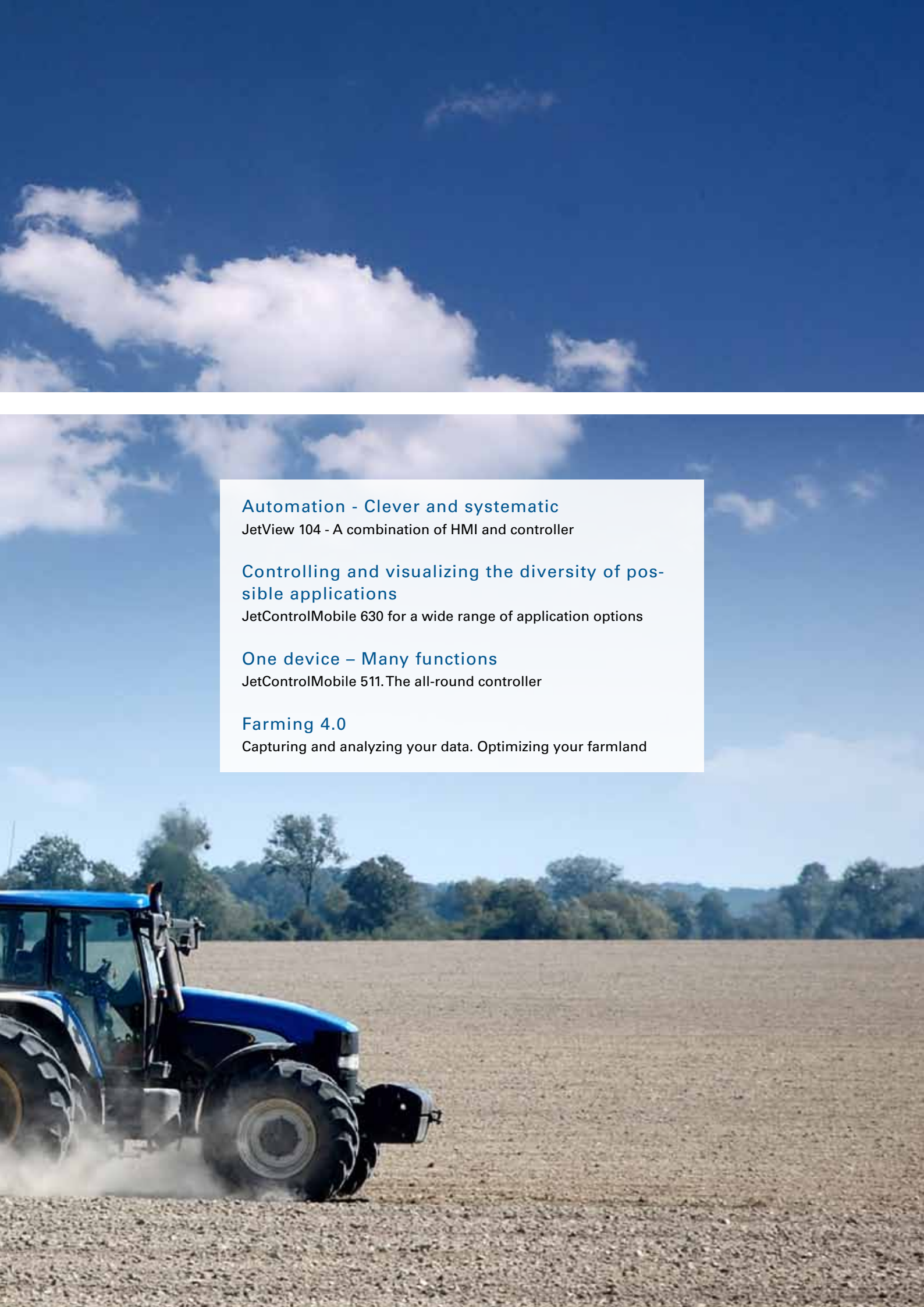
Flexible, scalable, specialized

We automate your success.

Automation Solutions for Agricultural Engineering

Know-how to perfect and control your implements

Coordinated automation solutions rely on a holistic approach to technical requirements, especially when it comes to implements. This means that a great variety of parameters enabling efficient cooperation of self-propelled machines with highly specialized implements must be taken into account. Networking of the systems also serves to establish permanent connectivity to the higher-level control center, which is paramount for optimum cultivation of farmland. Jetter AG offers a portfolio of custom-tailored agricultural technology. It comprises state-of-the-art and perfected automation solutions compelling by attractive technical features.



Automation - Clever and systematic

JetView 104 - A combination of HMI and controller

Controlling and visualizing the diversity of possible applications

JetControlMobile 630 for a wide range of application options

One device – Many functions

JetControlMobile 511. The all-round controller

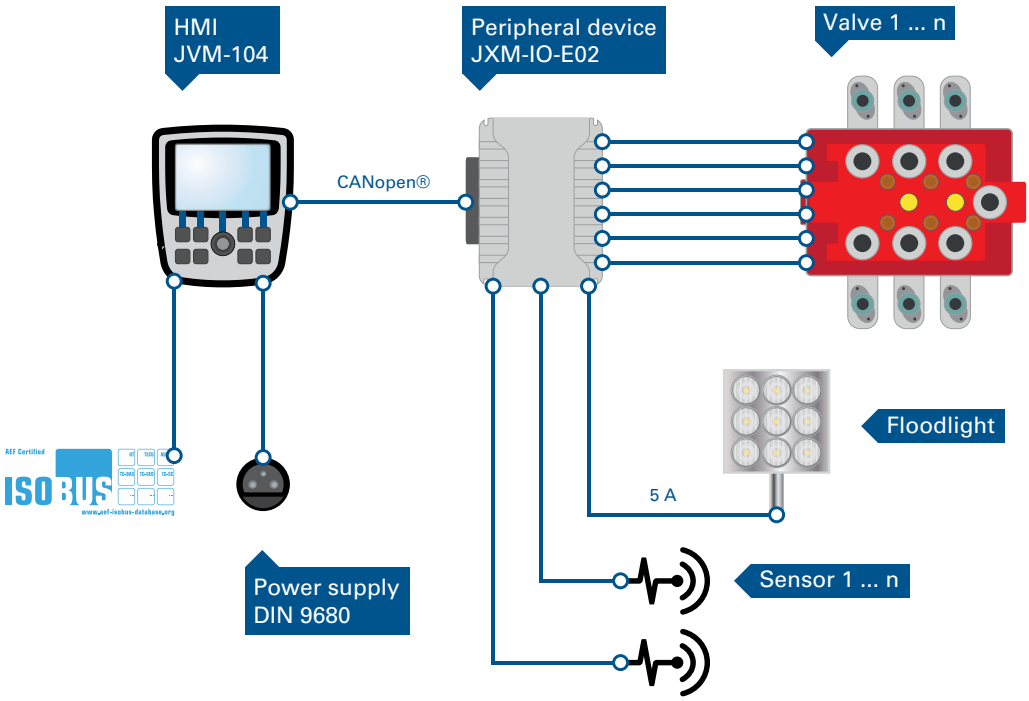
Farming 4.0

Capturing and analyzing your data. Optimizing your farmland

Automation - Clever and systematic

JetView 104 - A combination of HMI and controller

The JVM-104 is a very compact combination of a small-size HMI and a built-in controller for simple control tasks. Four proportional outputs of 2.5 A each and two inputs at the HMI allow for easily actuating the solenoid valves of the hydraulic blocks applied at, for example, stable manure spreaders, slurry tankers, loaders and lime spreaders. An external controller will not be needed. The outputs of the HMI have got an overload capacity of up to 5 A which let you connect a 5 A working light.



Many options: I/O node

If the conveyor speed of a stable manure spreader is to be synchronized with the speed of the vehicle, or if further functions are to be added, the two inputs for sensors and - very often - the number of outputs at the HMI JVM-104 are not sufficient any more. For these situations, a CAN bus interface has been provided at the HMI. This interface is just connected with a CAN bus node near a hydraulic block via "CAN data line". The CAN bus node in turn now houses the required inputs and outputs, the cables leading to the solenoid valves of the hydraulic block included. In order to prevent unnecessary cost, Jetter AG provides a large choice of exactly matching CAN bus nodes featuring 14 to 32 inputs and outputs - this leaves no connector unused.

Option: ISOBUS having got a second CAN bus port

As an option, the JVM-104 can also be supplied with a second CAN bus interface. This way, the vehicle manufacturer is offered two possibilities. One of them is to directly integrate an ISOBUS capable controller into the implement and to use the ISOBUS terminal located in the self-propelled machine. Yet, most manufacturers of simple machinery do not think there is a need for this at the moment due to high cost. JVM-104 offered by Jetter AG, though, is an alternative for a guaranteed future: The controller housed in the HMI is ISOBUS capable by default. Should, in the future, the implement have to be operated using an ISOBUS terminal, the HMI would be small enough to be placed on the implement. In this case, the JVM-104 would be connected with the ISOBUS terminal at its second CAN bus port. In this configuration, the JVM-104 has got two functions: On the one hand, it serves as a controller for the implement, on the other, it transmits all masks, the logic features and the graphic elements to the ISOBUS terminal. This visualization application for the ISOBUS terminal can either be provided in the JVM-104 already, or else the implement manufacturers can offer a software update kit to their customers, if needed.

Operating concept, graphics and programming as a service

First, the desired features for all variants are gathered in a specification. Based on this, the operating concept is designed. It takes the intuition of the users into consideration regarding available control elements at the HMI, such as switches, keys and the digipot.

This means that, for example, the features which are needed for more than 80 % of the total operating time of a certain machine are placed on the upper level of the mask. The lower part of the display shows symbols which are directly assigned to the corresponding keys. The area in the middle graphically displays the machine and all its functions. The upper part of the display shows the status and function symbols.

Another feature of the HMI is the color change of the symbols: As soon as a function can be activated it is displayed in green color. While it is active, it is orange; in case of a failure, it is red. The color change feature saves further symbols and is self-explanatory. The customer is absolutely free to design color and layout of the display. For each individual customer and project, the desired layout is printed on the display membrane. This way, even small-size companies can have their individual design printed at very low cost.

A pool of software features

After releasing all masks and graphic elements, the HMI and its integrated controller are programmed. All major features, such as drag-chain conveyor motion or the dosage gate have already been designed as "generic function modules", which only have to be combined and configured for the respective project. This saves development cost at a high quality of the software solution, as the pool of special function modules increases with every new project.

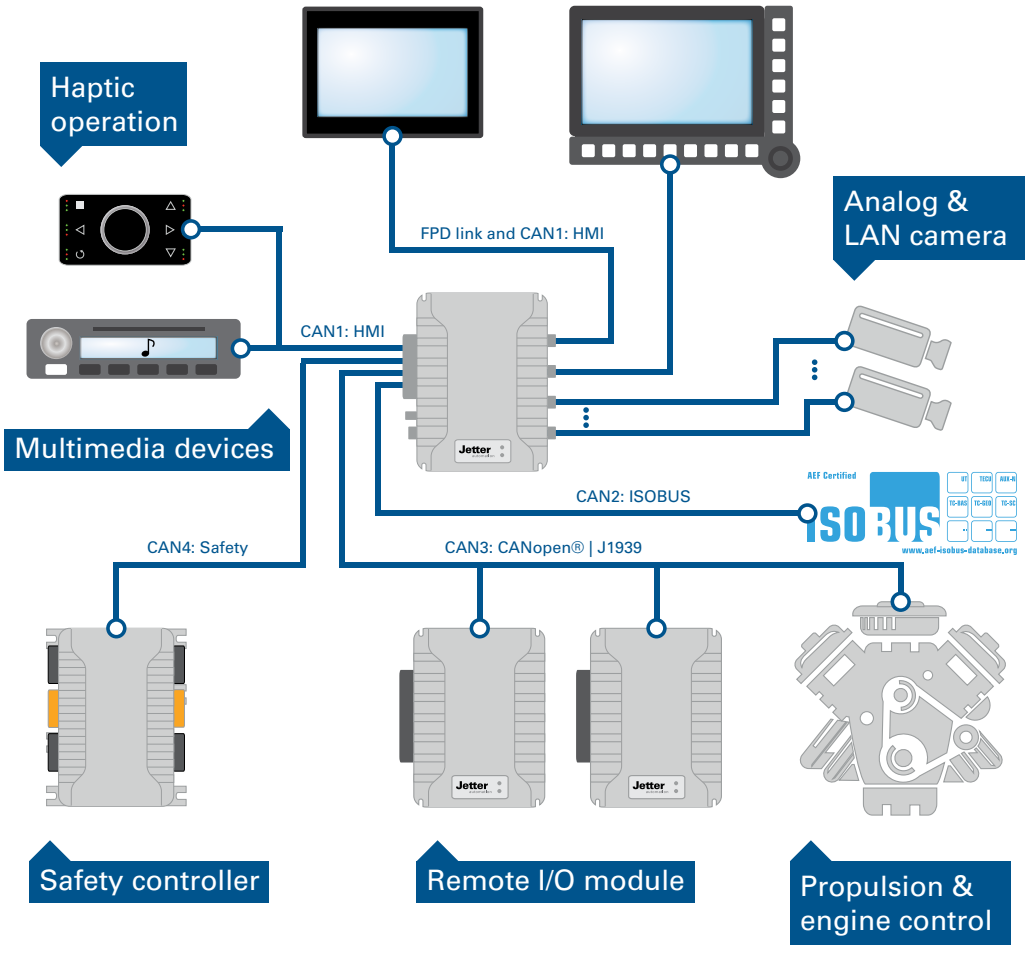
Wiring harnesses

The wiring harness - from engineering to manufacturing - is an integral part of the service package offered by Jetter AG. The objective is to develop one single wiring harness for all variants. Certain variants demand an additional small wiring harness to supplement the standard wiring harness.

Controlling and visualizing the diversity of possible applications

JetControlMobile 630 for a wide range of application options

Vehicles and mobile machines for all fields of application are equipped with an increasing number of features. The resulting complexity of such systems requires thought-out yet flexible solutions for controlling and visualizing the huge amount of data. The mobile controller JetControlMobile 630 has been especially developed for this purpose. A wide range of connectivity options and its rugged design make the JCM-630 the perfect all-round controller for self-propelled agricultural machines. Numerous useful functions which can be used across all industries open up a wide range of application options. Get some ideas for your projects from the following examples.



Working functions across several displays

Higher clarity and improved usability

The great number of functions implemented in self-propelled machines of all kinds results in cockpits cluttered with individual instruments.

To prevent operating errors in such situations, the great number of data sources must be processed and visualized according to an ergonomic concept. In many cases, it makes sense to place these functions on several displays. The controller JCM-630 processes all kinds of signals and distributes them according to the vehicle's individual visualization concept.

The benefits to you: Better overall view | Maximum flexibility

- High-performance controller for signal processing and preparation
- Visualization on several displays for higher clarity and improved usability
- JetViewSoft programming tool offers maximum flexibility for your visualization application
- Centralized controller with plug-and-play display allows for fast data exchange with immediate availability
- High-level language programming supports both control and data processing features, which is ideal for farming 4.0
- Integrated ISOBUS control

Surround view systems

Always getting the full picture

Overview of all areas around a vehicle is becoming an increasingly important feature. Surround view systems play an important role in the active safety of the driver, of the vehicle itself, and also of casual bystanders. Vehicles are equipped with several digital cameras with wide-angle lens and high resolution. These cameras show the front, the rear and the sides of the vehicle simultaneously and in realtime.

The controller merges these images on a display in the driver's cab in a way that the vehicle can be seen from a bird's eye view. As the driver can choose from several views, blind spots are a thing of the past. Surround view also allows for faster maneuvering processes and ease of operation in critical traffic situations such as narrowed lanes. Thus, the drivers are in full control of what is happening around the vehicle.

The controller JCM-630 handles the complex integration of camera images enabling surround view, object detection and smart operating concepts.

The benefits to you:

- Improved vision | Increased safety | Higher productivity
- All-round vision in tight/critical situations
- Safe maneuvering
- Protection of the vehicle thanks to improved vision
- Videos of driving operations can automatically be recorded for documentation purposes
- Centralized controller with plug-and-play display allows for fast data exchange with immediate availability

Digital rear view mirrors

Better overview | More information

Camera/monitor systems can not only replace conventional mirrors in vehicles, they can also display additional and useful information. The new standard ISO 16505 defines the minimum technical requirements. It deals with several aspects, including safety and ergonomics, or system performance. The focus is on increasing safety by an optimized field of view. Another advantage is that the display can be combined with assistance systems reacting to certain traffic situations, for example, alerting the driver if there is a car coming up from behind. Furthermore, the possible dazzle effect by light from external sources that is reflected by mirrors into the driver's eyes is almost completely eliminated. The controller JCM-630 in combination with the software tool JetSym STX lets you perfectly adapt camera/monitor systems to the specific control and visualization requirements of the vehicle.

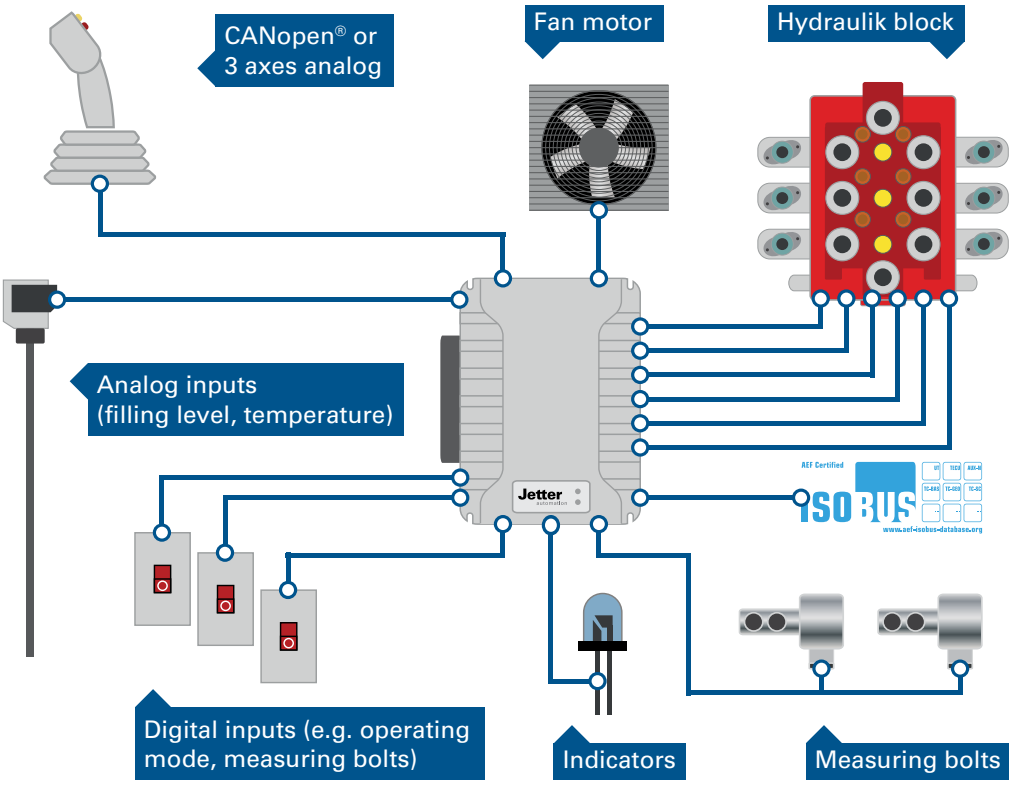
The benefits to you: More information | Increased safety

- Perfectly aligned cameras provide an optimum field of view
- Technical features automatically reduce dazzle effect
- Integration of additional information increases safety
- Centralized controller with plug-and-play display allows for fast data exchange with immediate availability

One Device – Many Functions

JetControlMobile 511. The all-round controller

By analogy with industrial automation, several varieties of system architecture have also been established in mobile automation depending on the individual machine type and implement. For this reason, Jetter offers a modular and scalable automation program made-to-measure for this market. The great variety of machines and devices requires further very flexible and scalable system solutions to keep development costs low.



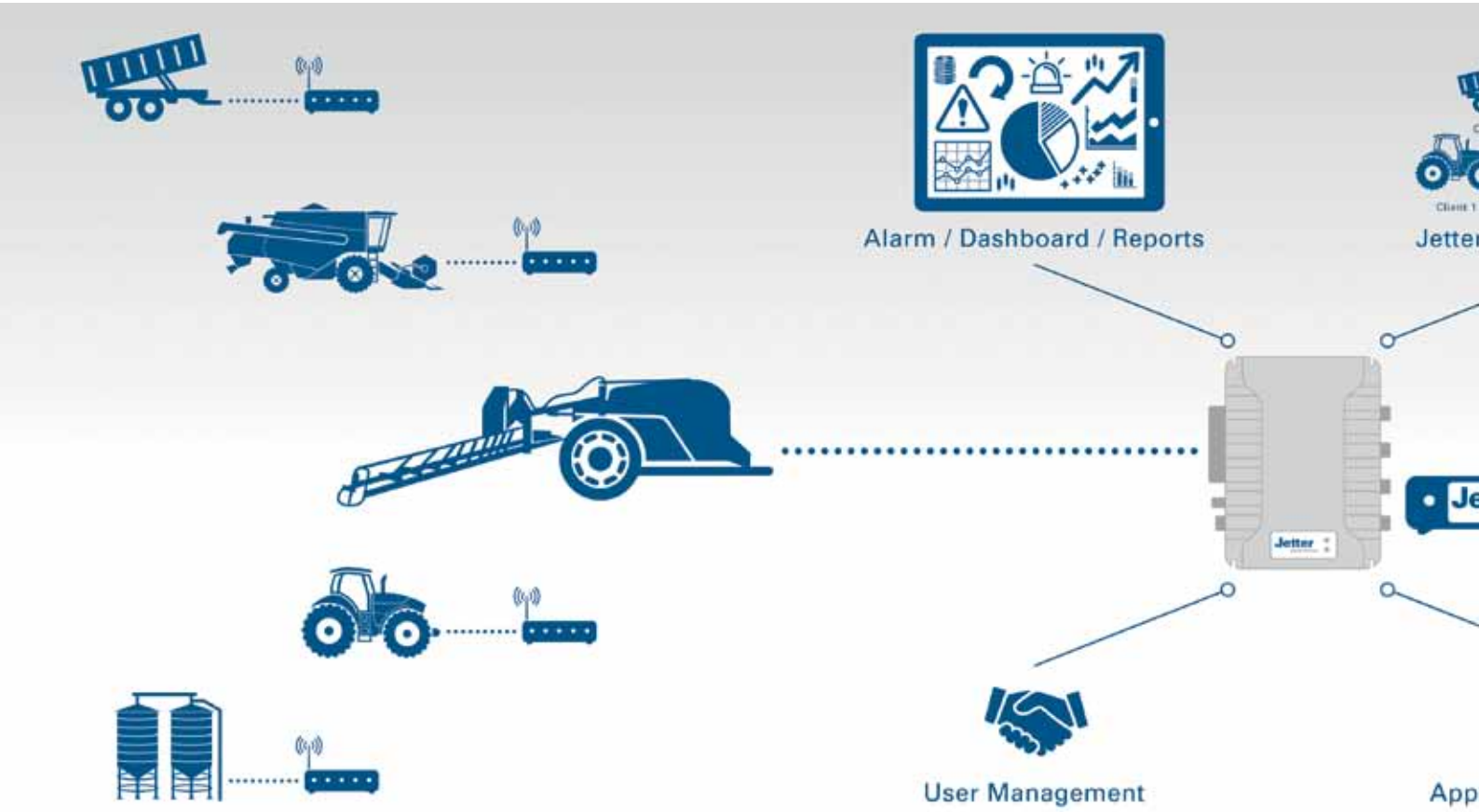
JetControlMobile 511 for flexible and customized development

If many I/Os are needed, or if there is an ISOBUS terminal already, the controller JCM-511, combined with the JetViewMobile 104 is the best choice. The basic version is well equipped already with 24 I/Os comprising four digital/PWM outputs of up to 3.5 A ampacity, eight digital inputs and four interfaces (2x CAN, USB, LIN, and optional Ethernet). Another special feature are its two H-bridges of a 15 A PWM ampacity. They can be used to control motors of higher performance classes. The controller is also able to operate ISOBUS terminals, as all JetControlMobile models can do.

A unique feature of the controller in the die-cast aluminum housing are the two slots for optional extension modules, the so-called MX modules. Both these standard extension modules and customizable boards add up to 40 I/Os to the controller. An MX module for two weighing cells with tilt sensor, for example, is available ex works. These two slots enable Jetter to reduce the cost of individual functions to the development of the modules (cards) without making additional hardware changes necessary. Should the customer need further inputs or outputs to set up new functions for the project in the make, he or she can add them any time by means of plug-in cards going with the JCM-511 controller.

Farming 4.0

Networking all over



Mobile automation allows for a multitude of partially or fully automated processes, especially in tractors and implements connected to them. The farmers do not have to control the process all by themselves, but they are supported a great deal by assistance systems. Implements and vehicles merge to become intelligent autonomous or self-propelled machines. This way, the farmer can be eased of speed control or further tasks such as sowing or fertilizing. He or she mainly concentrates on monitoring the process and only in-

tervenes if needed. This both remarkably simplifies cultivating the farmland and opens up unseen opportunities for agriculture to further increase yield and efficiency. Seamless integration of automation solutions by Jetter AG - data can be gathered, analyzed and sent to the Cloud both directly and safely.

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Jetter AG at a glance

For decades, the name Jetter AG has stood for highest demands on automation solutions that are used in a wide range of industrial and mobile automation sectors. Products and components by Jetter AG stand out thanks to their high degree of system integrity and diversity. Our in-house R&D departments (hardware and software), as well as our production plants in Germany allow us to always act in a quick and flexible manner. This, combined with a comprehensive range of Professional Services, enables us to put almost any customer request into practice.

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