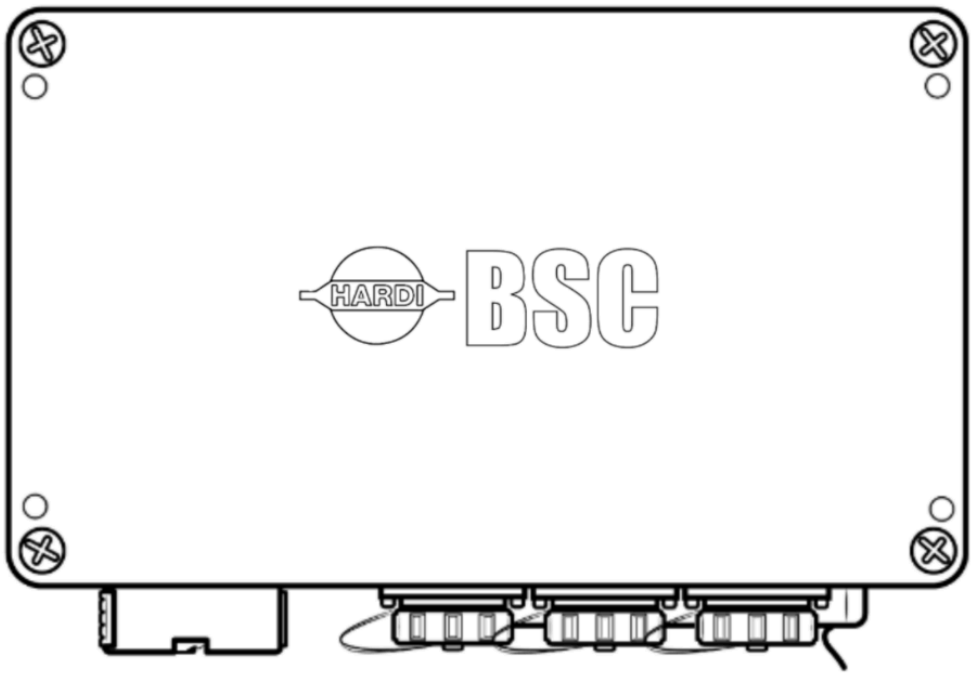
Product overview

BSC - Boom section and application rate controller



English

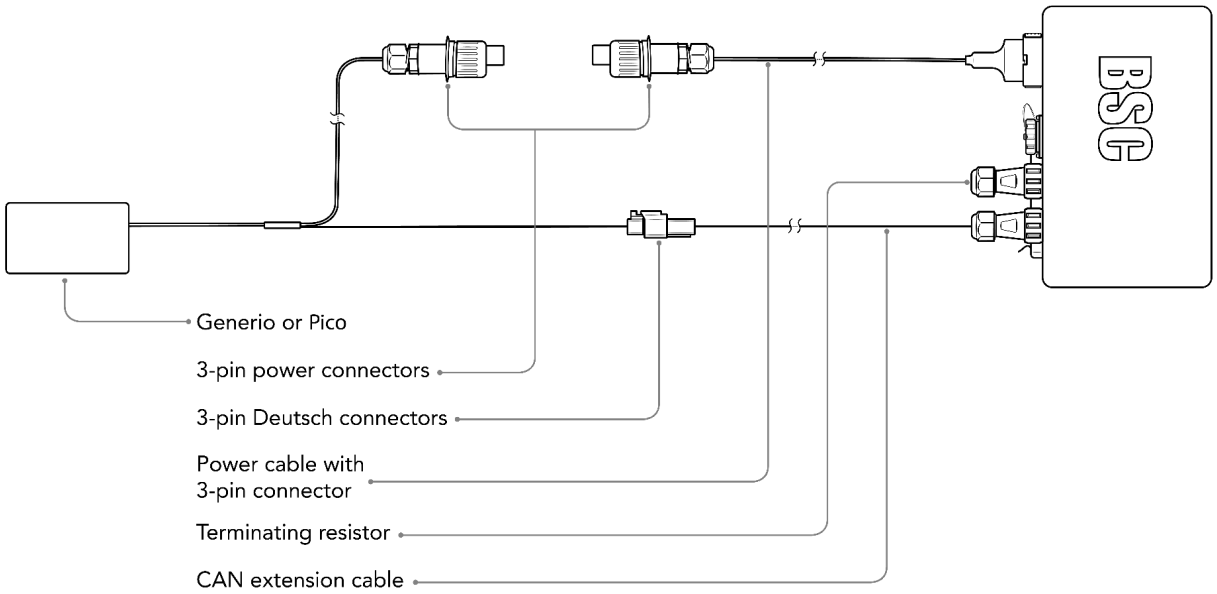
Content

English

HARDI BSC_BHC User manual

CASE 3: BSC only with GENERIO or PICO

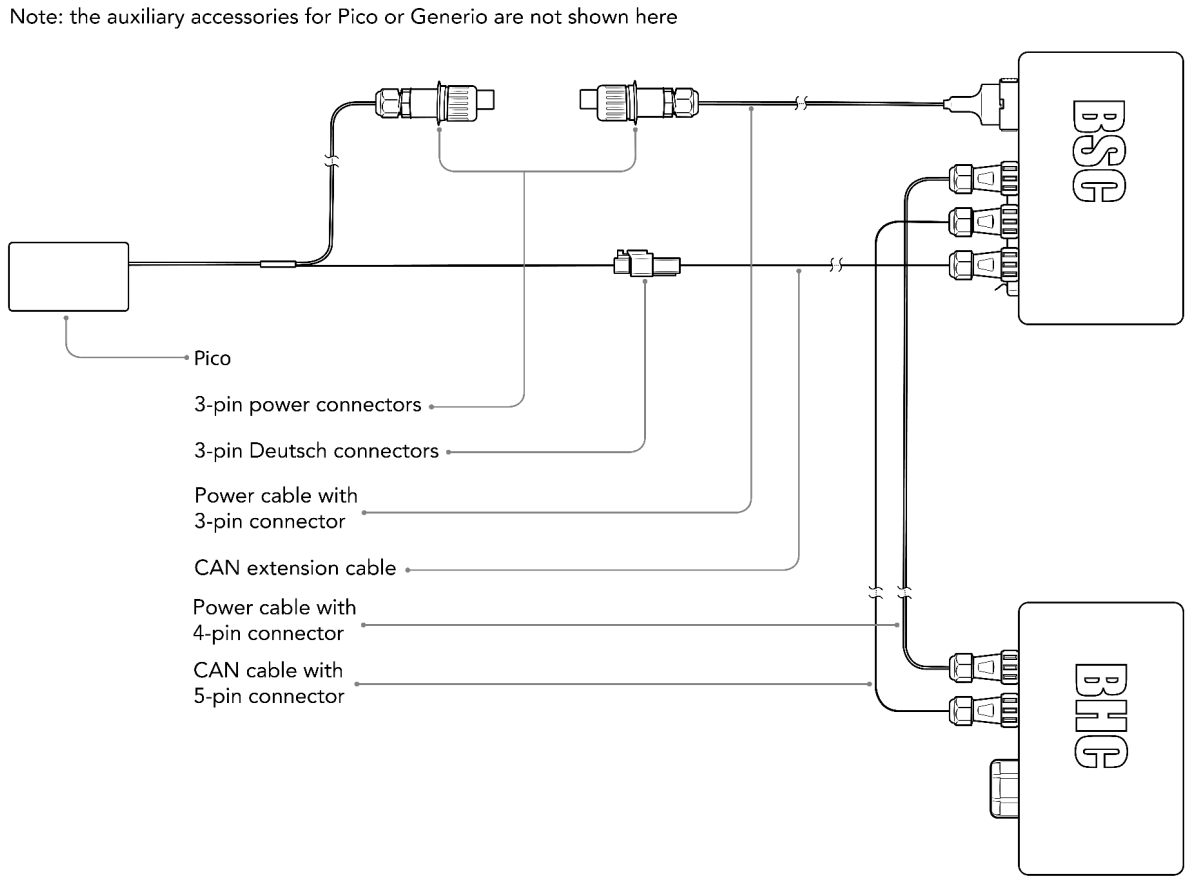
Note: the auxiliary accessories for Pico or Generio are not shown here



For powering the BSC, use the 3-pin power cable with the 16-pin rectangular connector (same as with the ISOBUS). Connect the CAN extension cable into one of the 5-pin sockets, and plug the terminating resistor into the remaining one. Then connect the 3-pin Deutsch connector of the extension cable and PICO/GENERIO cable. Connect the M8 connector of the PICO/GENERIO cable into the PICO or GENERIO. The devices use different 3-pin power connections but make sure to use power sockets which are close to each other. Otherwise, the system may not work.

English

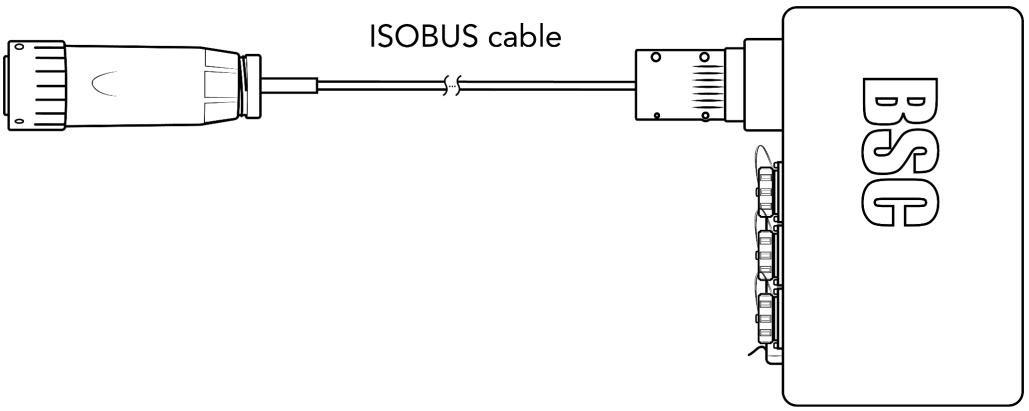
CASE 4: BSC and BHC with PICO



The connection here is similar to the CASE 3, however it can only be used with PICO. Connect the BHC to the BSC as shown in CASE 2.

English

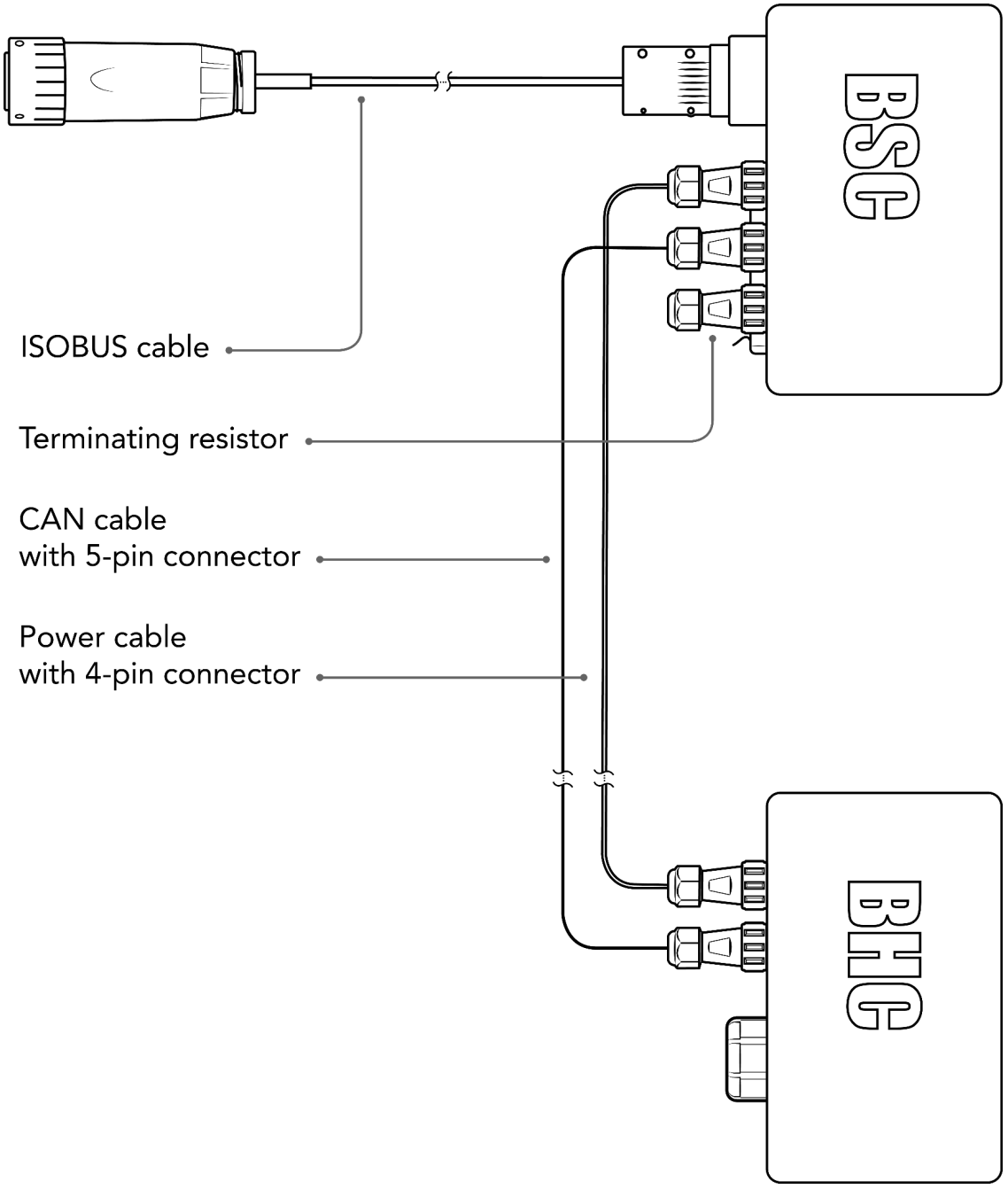
CASE 1: Only BSC on ISOBUS



Connect the ISOBUS cable into the 16-pin rectangular socket. First, pull out the red handle sideways- there is a hole for a flat screwdriver to make this easier. Then push the connector into the socket, push the red handle back. It should make a clicking sound when fixed.

English

CASE 2: BSC and BHC on ISOBUS



Connect the ISOBUS cable as shown in CASE 1. Then connect the 4-pin power connector to the power output of the BSC and power input of the BHC. Similarly, connect the 5-pin CAN cable. Either one of the 5-pin socket on the BSC can be used for this. Plug the terminating resistor into the remaining 5-pin socket.

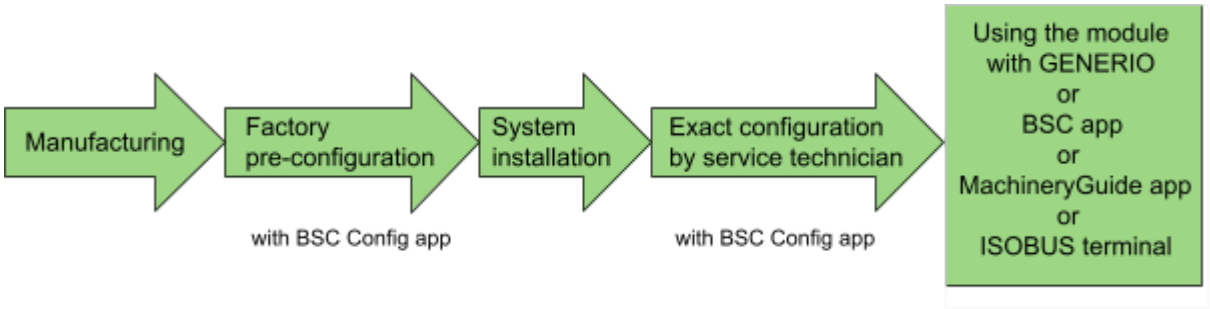
English

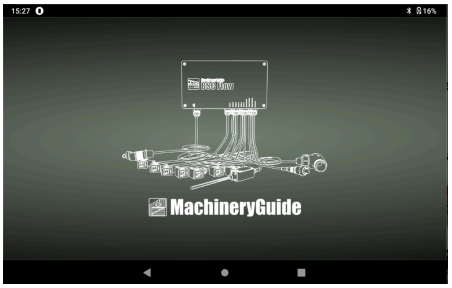
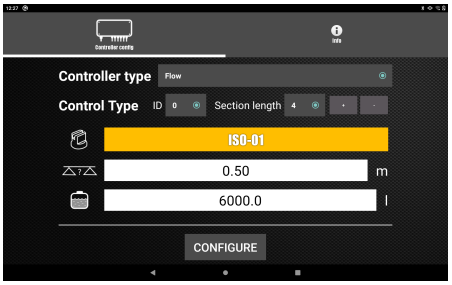
The BSC Config App

Regardless of which module and display is used and in which combination, the MachineryGuide BSC control module has to be configured along several options. The control modules are mainly prepared and pre-configured during the manufacturing process. But since an ever-increasing number of resellers, who keep the modules in stock (not ordered for a specific sprayer retrofit), there is a possibility to configure the hardware during on-site installation by a service technician.

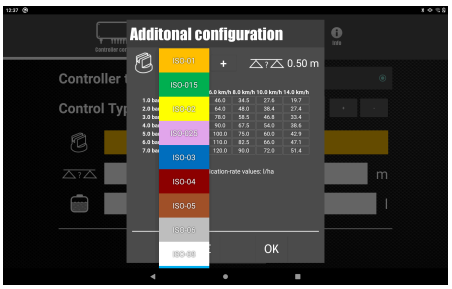
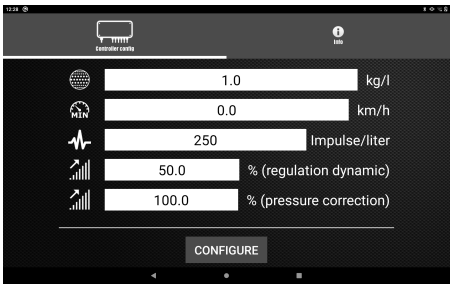
There is a dedicated Configurator App, which is available on Google Play:
https://play.google.com/store/apps/details?id=hu.machineryguide.bscisobusconfigapp

Preparation and installation process of BSC module:

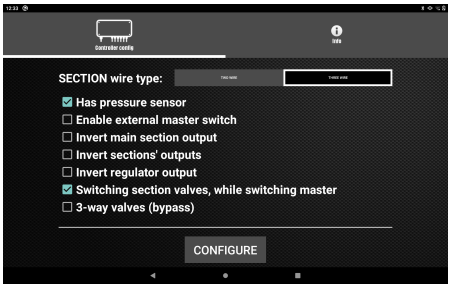


Screenshot	Function	Description
	Splash screen	The app tries to establish connection via WiFi during the launch of the app.
	Controller type	BSC/Plus/Pres/Flow/ ISOBUS
	Section block ID	0-10 (ID of the section number group) **For HARDI variant:** **- always set to 0**
	Section length	1-12 (section number in the actual group)

English

		**For HARDI variant:** **- only set it between 1 - 9**
	Nozzle type	Standard ISO nozzle list. If the sprayer has specific nozzle type that is not available in the ISO list, than specific nozzle characteristics can be added individually, which will be stored in the flash memory of the control module after the configuration.
	Nozzle distance	Distance between nozzles in meter.
	Density	Density of liquid, used for pressure based system. Only available for Plus/Pres.
	Min. speed	Below this speed regulation stops and the master valve will switch off.
	Impulse number of flow sensor	Impulse number of flow sensor. Only available for Flow/ISOBUS.
	Regulation dynamic	0…100% that belongs to the impulse width of the PWM signal which controls the regulation valve. More info on page 18 of BSC user manual.
	Pressure correction	The tubes, fittings, etc. of the sprayer cause pressure drop. This can be compensated in case of pressure-based systems.
	Pressure range	The BSC module can be used with any type of current output pressure sensor. The measurement range of the sensor can be set here.
	Min. pressure	This parameter will prevent the system from going under a minimum pressure.
	Max. pressure	Safety function to avoid overpressure. Above this pressure the regulation valve will open with the highest speed.

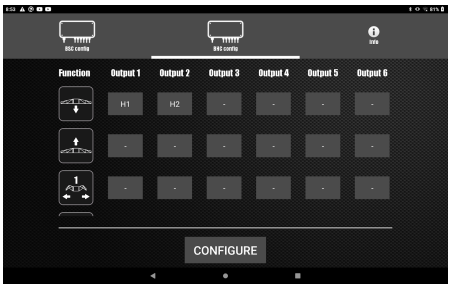
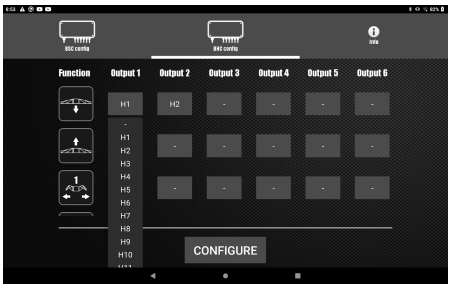
English

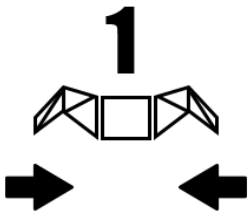
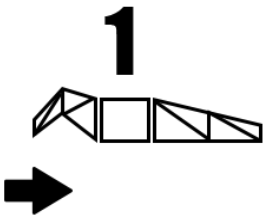
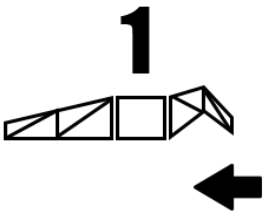
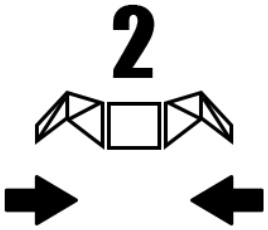
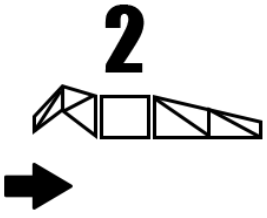
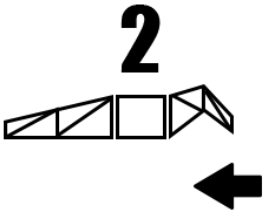
	Has MASTER valve	ON / OFF option. **For HARDI variant:** **- only set it always ON** (because if this would be disabled, then the wired section outputs would be shifted)
	MASTER valve wires	2-wires / 3-wires **For HARDI variant:** **- set it always to 3-wires** (because the motherboard connects to the relay-board as 3-wire)
	SECTION vale wires	2-wires / 3-wires **For HARDI variant:** **- set it always to 3-wires**
	Has pressure sensor	ON / OFF option.
	Enable external master switch	External switch can be used for liquid fertilizer applicators to detect machine position. When the machine is lifted up, the regulation and master valves will automatically stop.
	Invert master, section and regulator outputs	Invert option for the logic of the output.
	Switching section valves, while switching master	If there is no master valve on the system, this makes switch on and off each section by clicking on the master button on the display.
	3-way valves (bypass)	In case of flow-based systems, this option has to be enabled. In this case the flow of the liquid that goes back to the tank (when a section is switched off) is deducted from the overall flow measurement.

⚠	It is recommended to disconnect all User Interface (BSC app/GENERIO/MachineryGuide app/ISOBUS terminal) from the system during the configuration process to avoid any malfunction.

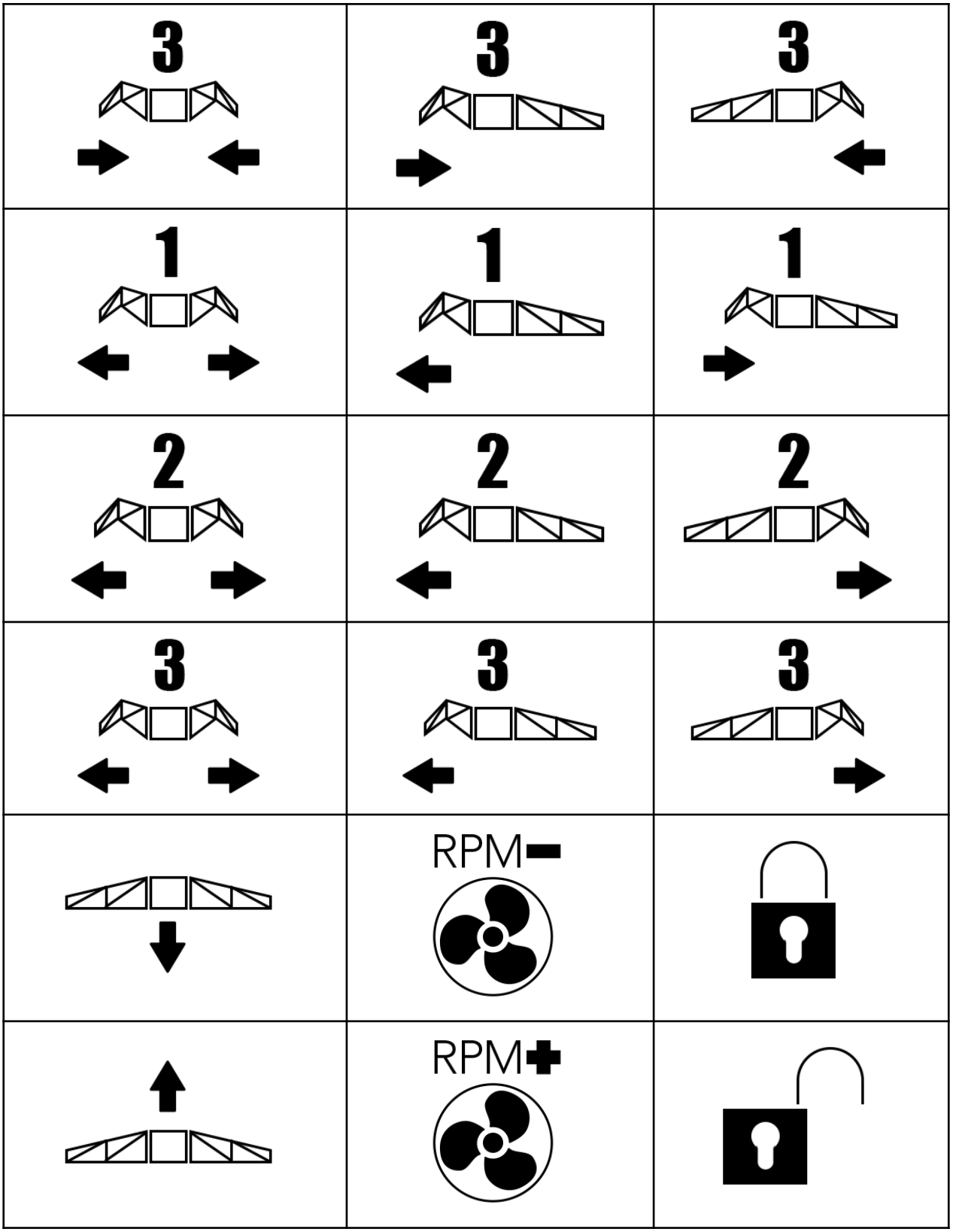
English

BHC Config options:

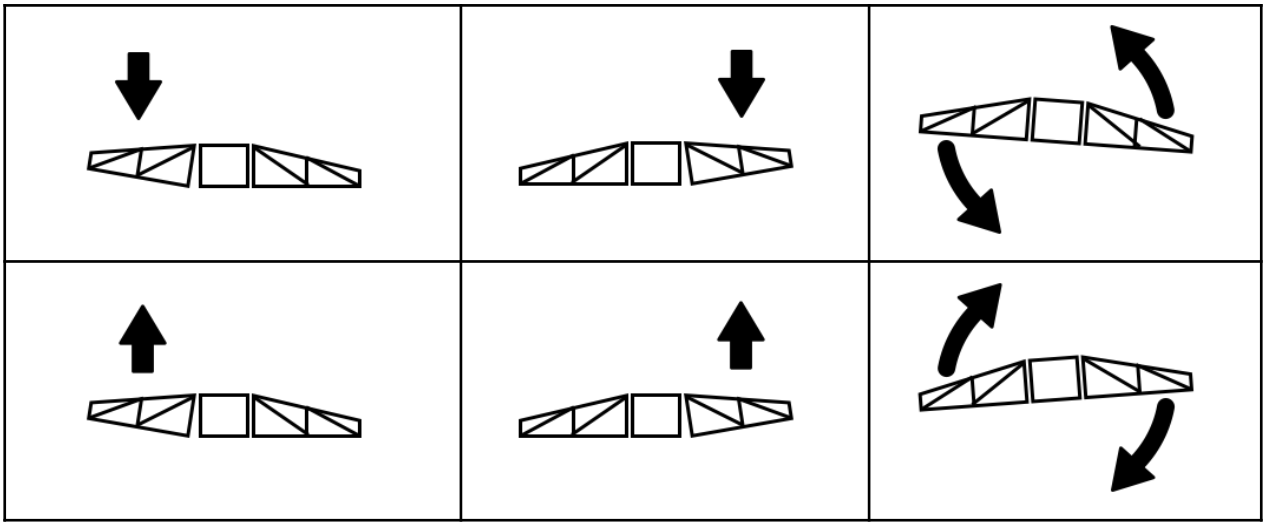
Screenshot	Function	Description
 	Output configuration	The system supports up to 30 symbols. The symbols that have at least one configured output, will be visible on the MachineryGuide app or ISOBUS terminal. Each symbol has max. 6 configured output.

Supported hydraulic functions		
		
		

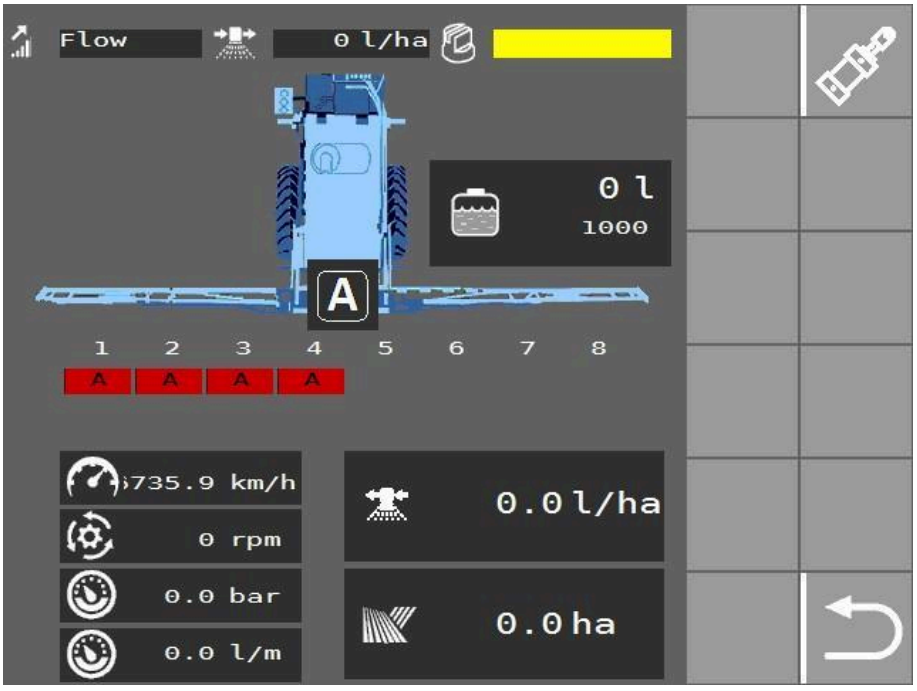
English



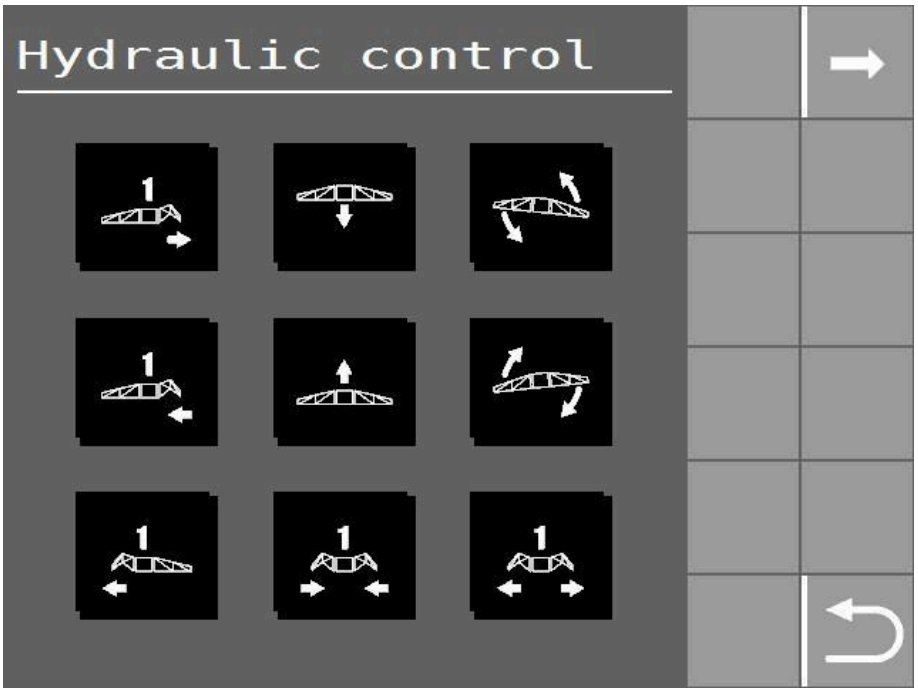
English

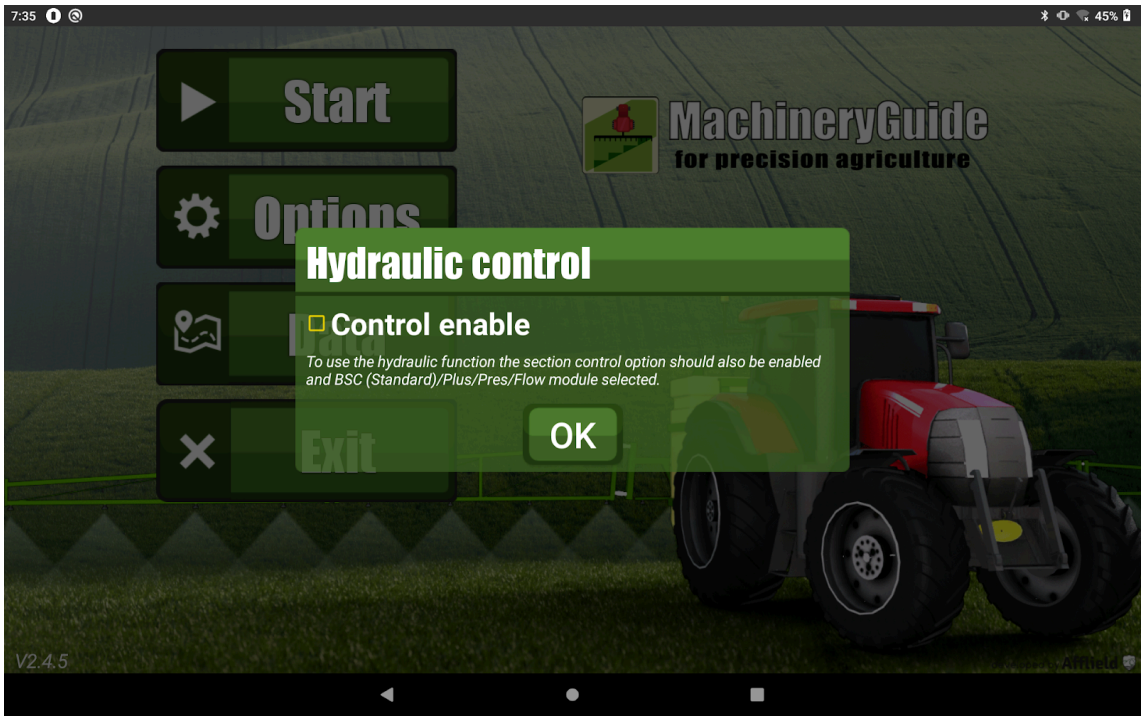


On the ISOBUS terminal after the BHC configuration, you can find a button that belongs to the hydraulic functions (top right corner on the below screenshot). By clicking on it, you can access the hydraulic functionality.



English





In the MachineryGuide app, you only need to enable the hydraulic function:

To open this window you need to go into “*Options menu*” -> “*Hydraulic control*” option. If the menu item is not visible, you can switch it on in the “*General setting*” -> “*Option menu items*”.

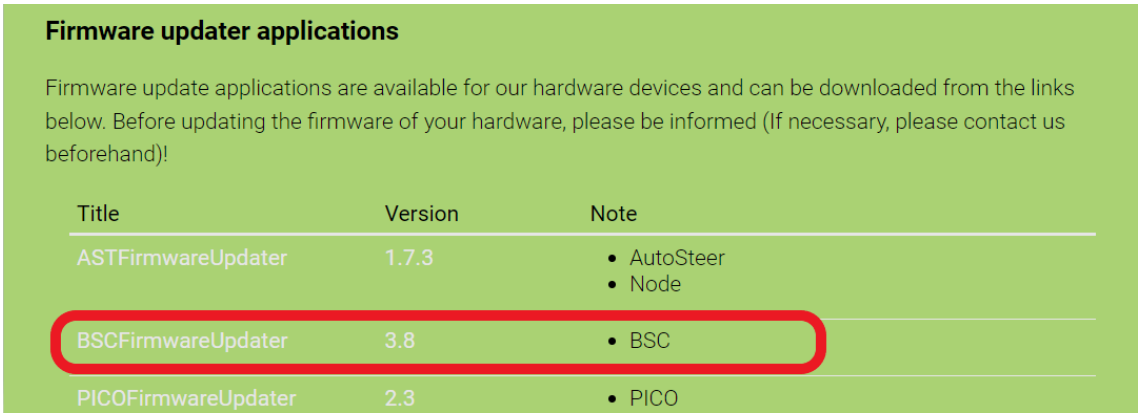
English

BSC Firmware upgrader app

In case of new released functions, or bugfixes for BSC, the embedded software (firmware) of the hardware can be updated. For the update procedure we offer a dedicated application that can easily and wirelessly handle the update procedure.
(Please consult our customer service or company reference before any update procedure.)

Steps:

1. Please download the latest firmware upgrader app from our website:



Firmware updater applications

Firmware update applications are available for our hardware devices and can be downloaded from the links below. Before updating the firmware of your hardware, please be informed (If necessary, please contact us beforehand)!

Title	Version	Note
ASTFirmwareUpdater	1.7.3	• AutoSteer • Node
BSCFirmwareUpdater	3.8	• BSC
PICOFirmwareUpdater	2.3	• PICO

https://machineryguide.hu/downloads

2. Launch the downloaded app
3. Switch on the BSC hardware
4. If there is any connected device to BSC over CANBus, please disconnect them until the update process is ongoing.
5. Start the updating process with the BSC Firmware updater app, the distance between the tablet and the BSC hardware should be within 10m.
6. Read the comments of the app at each step and click on “Next” buttons.

English

MachineryGuide

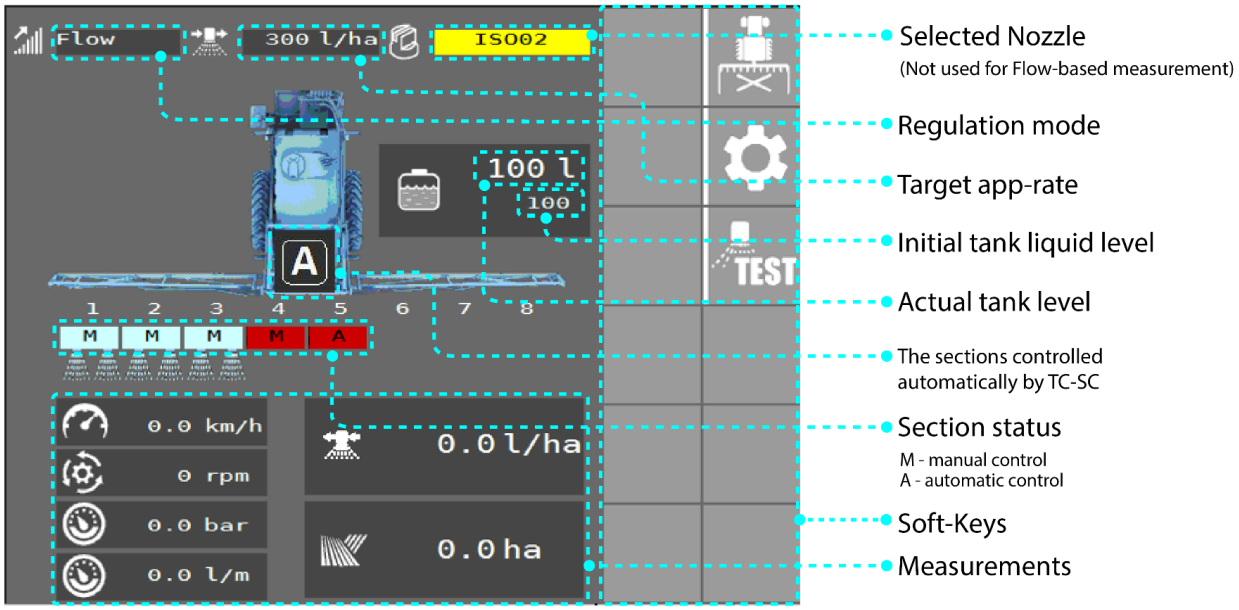
Please refer to “MachineryGuide GPS Guidance - User manual - System setup” and “MachineryGuide GPS Guidance - User manual - Starting a job” documents.

English

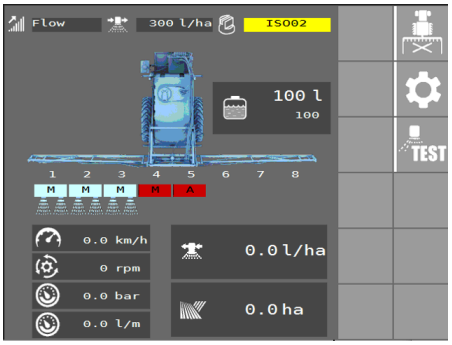
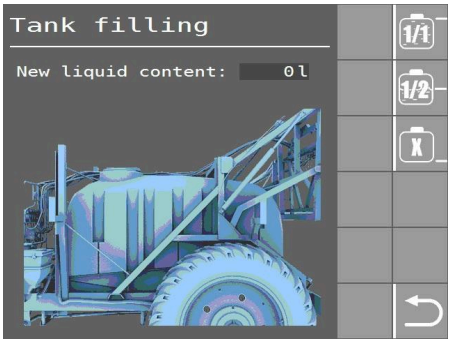
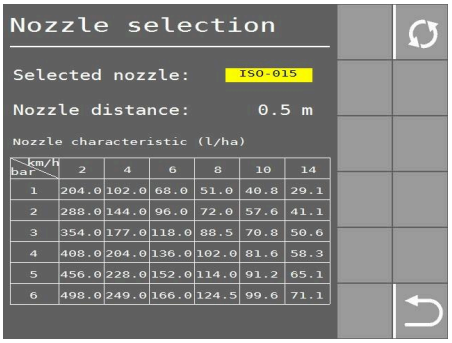
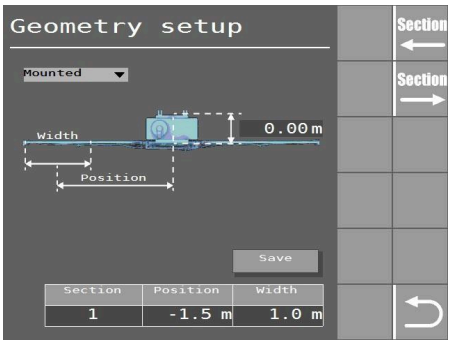
ISOBUS terminal

BSC System on different ISOBUS terminal displays

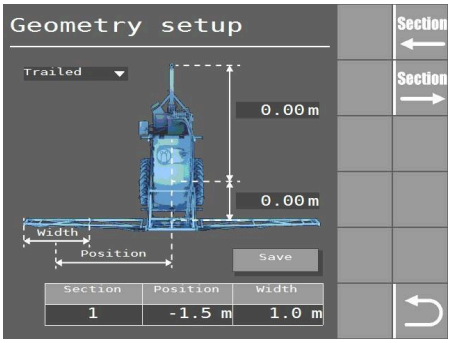
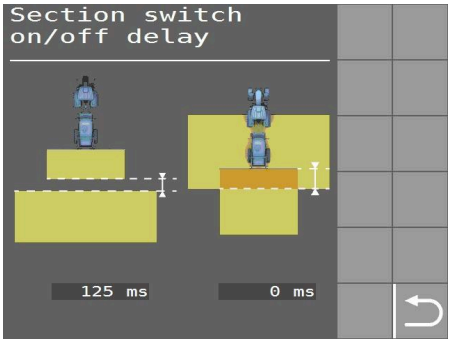
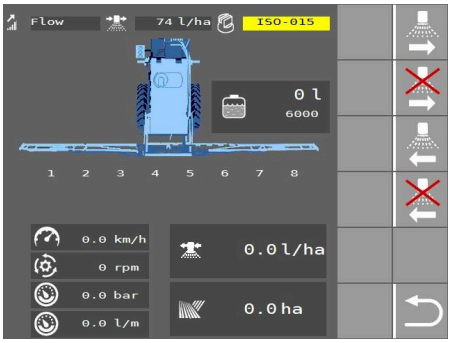
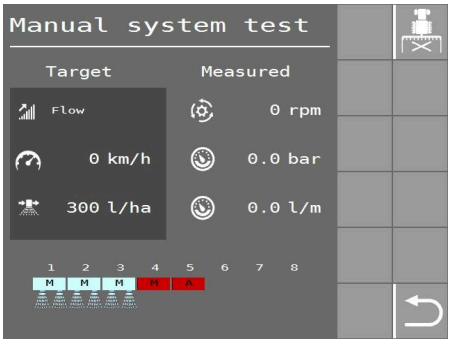
Our BSC system can also be used with ISOBUS protocol, so the sprayer controller can be connected to any ISOBUS compatible machine. The application can be used for both manual and automatic spraying. It also provides management of maps for variable rate control.
The application supports 480*480 pixel and 240*240 pixel resolution display.



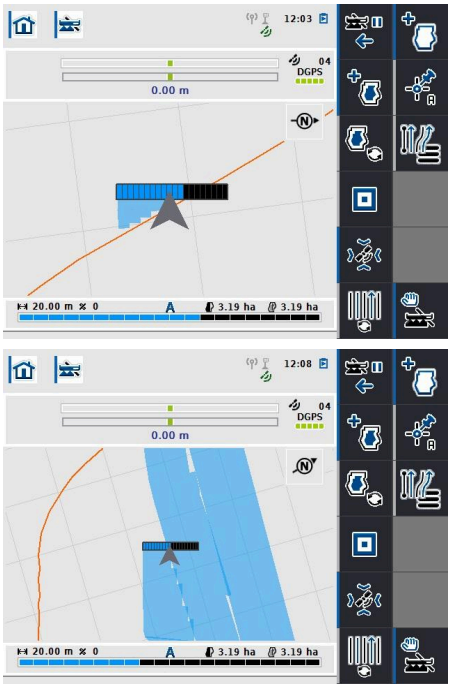
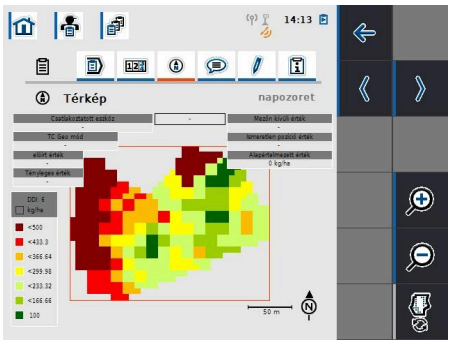
English

Screenshot	Function	Description
	Measurements	Speed, TLT RPM, pressure, flow, liquid tank level, applied application-rate, applied area
	Control fields	Target application-rate, regulation mode: flow-based/pressure-based, nozzle type (in case of pressure-based control), section and master state for manual control
	Liquid level	The user has to set the initial level of the tank after re-filling it. The software will decrease this value during the operation based on the measured flow rate. The tank capacity is set by the **BSC Config app**, so there are given full/half and empty quick buttons, but the exact quantity can be also sent by keyboard.
	Nozzle selection	In case of pressure-based regulation type. The nozzle characteristics can be selected here. The list is loaded from the flash memory of the module. Once the nozzle is selected, the data-table can be loaded with the reflect button.
	Geometry setup	The BSC ISOBUS system handles both mounted and trailed sprayer solutions. After selecting the machine type, the distance from the join-point and the section width can be set.

English

		
	Section on/off delay	Since each type of section valve has different switch-on characteristics, the delayed switch-on time can be set manually.
	Quick buttons for manual section switch	The sections can be switched on/off manually by clicking on the section symbol below the sprayer pictures, but there are also short-keys as well on the right hand-side of the screen in the soft-key area of the UT.
	Manual system test	This window allows the user to test the regulation in the stationary position of the sprayer.

English

	Automatic section control	Sections automatically switch off when there is an overlapped area, or if any section is outside of the field. This function may need an unlock key on the ISOBUS terminal.
	VRA - Variable Rate Application handling	After loading the prescription map into the Universal Terminal, the display will send the current app-rate value of the zone to the control module as target rate. This function may need an unlock key on the ISOBUS terminal.