ME MÜLLER®
ELEKTRONIK

Operating Instructions

MULTI-Control

Read and follow these operating instructions.

Keep these operating instructions in a safe place for later reference.

Company details

Document

Operating Instructions
Product: MULTI-Control
Document number: 3030248965a-02-EN
As of software version: V02.15.12
Original language: German

Table of contents

1 About MULTI-Control

MULTI-Control is used to transmit work specifications **simultaneously to multiple** individual components of an agricultural implement.

Preconditions

To be able to use MULTI-Control, you require:
- An ISOBUS-compatible machine that fulfils at least one of the following conditions:

  – It has **more than one metering unit**.

  – It is used to spread/apply several **different products** simultaneously.
    For example: Planter/seeder with metering unit for fertilizer and seed.

  – It has **several working widths** that can be divided into sections.
    For example: Planter/seeder with fertilizer bar and coulter bar.

- The MULTI-Control license.
- The ISOBUS-TC license. MULTI-Control is an extension of the ISOBUS-TC application. Refer also to the ISOBUS-TC instructions.
- Maximum of 200 sections for SECTION-Control.

2 Basic terms

2.1 Metering units

A metering unit is the component on the machine that is responsible for regulating the spread/application rate.

Examples:
- Field sprayer - The control valve.
- Planter/seeder - Metering motor or a mechanical or hydraulic metering drive.
- Fertilizer spreader - Gate, metering auger, conveyor belts or other metering mechanisms that regulate how much fertilizer falls onto the spinner discs.

Each metering unit regulates the target rate that is spread/applied by one or several sections. The GPS position of these sections is decisive for determining the area on the prescription map from which the target rate should be taken.

2.2 Prescription Maps

Prescription maps are maps that contain information on the quantity of a product (fertilizer, seed, pesticide) to be spread/applied on each area of the field.

MULTI-Control distinguishes between the following types of prescription maps:
- Prescription maps in **shape format**

  – Shape prescription maps are transferred from the USB memory device to the terminal. They are saved with the field data in ISOBUS-TC.

- Prescription maps in **ISO-XML format**

  – XML prescription maps are managed and added to the tasks in a Farm Management Information System.

Each prescription map contains:
- The division of the field into areas with a target rate.
- Target rates.
- The unit in which the target rates are measured. Example: l/ha, seeds/ha, kg/ha. The units tell the system whether the prescription map was created for liquid or solid products. The units also determine whether an ISOBUS job computer can work with a prescription map. A prescription map can contain one or several products, which can consist of different agents.

3 Possible functions for MULTI-Control

3.1 MULTI-Rate

Although the machine is equipped with several metering units, there is only one product in the hopper. Therefore, only one product will always be spread/applied across all of the metering units.
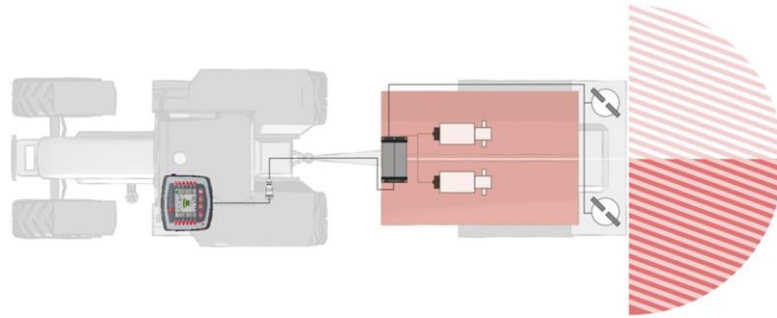
Example of a fertilizer spreader: The same fertilizer is spread on the left and right. The rate depends on the prescription map.

In this case, multiple metering units must use the same prescription map:

- Instructions for shape [→ 10]
- Instructions for ISO-XML [→ 13]

3.2 MULTI-Product

The machine is used to spread/apply different products simultaneously. Therefore, a position-based target rate must be transmitted to each metering unit for each product.

Examples:

- Planter/seeder - Fertilizer and seed simultaneously.
- Field sprayer - Two spray agents simultaneously.
- Fertilizer spreader - Two types of fertilizer simultaneously. The products are mixed during the spreading/application procedure.
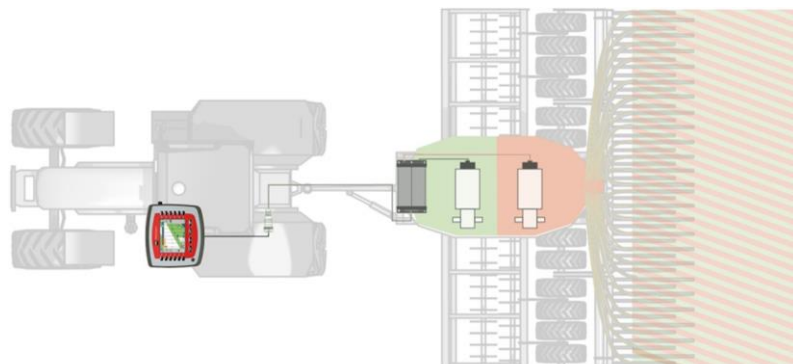
Example of a planter/seeder: Fertilizer and seed based on different prescription maps.

Possible methods, depending on the type of prescription map:

- Method 1: Multiple prescription maps are used simultaneously. Each prescription map contains rate specifications for a specific metering unit.

    – Instructions for shape [→ 10]

    – Instructions for ISO-XML [→ 13]

▪ Method 2: One prescription map simultaneously contains different specifications for multiple metering units.

    – Not possible with shape

    – Instructions for ISO-XML [➜ 13]

The selection of the method depends primarily on the PC software that was used to create the prescription maps. The terminal offers a solution for both methods.

3.3 MULTI-Device

The machine is equipped with several implements and several job computers. Each of these job computers controls at least one metering unit.
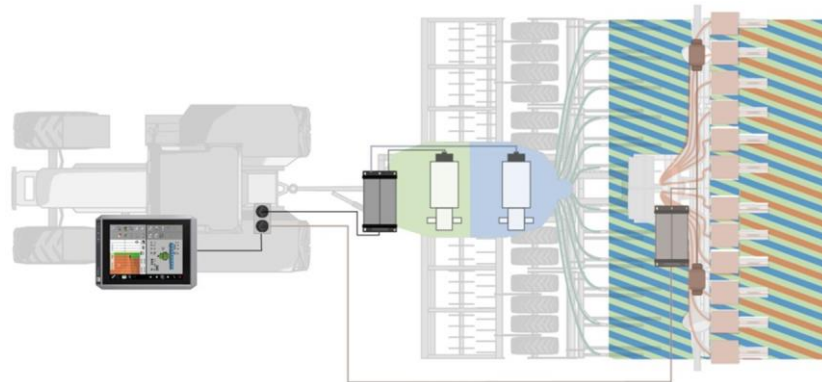

Example of a slurry tanker and planter/seeder: Processing based on different prescription maps.

Possible methods, depending on the type of spreading/application:

▪ Method 1: Multiple prescription maps are used simultaneously. Each prescription map contains rate specifications for a specific implement and its metering units.

    – Instructions for shape [➜ 10]

    – Instructions for ISO-XML [➜ 13]

▪ Method 2: A prescription map is used for one implement. The other implement was already given a fixed target rate in the job computer application or receives this fixed target rate from the ISOBUS-TC application.

    – Instructions for shape [➜ 10]

    – Instructions for ISO-XML [➜ 13]

With this machine type, please ensure that the correct sequence is set in the list of connections in the ISOBUS-TC application. You can find out how to change the list of connections in the ISOBUS-TC instructions.
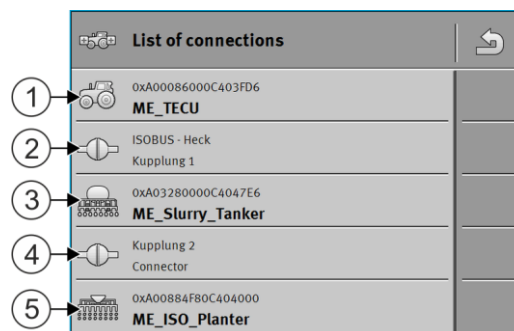

Example for a list of connections in ISOBUS-TC with a slurry tanker and precision planter

1	Vehicle	4	Coupling between the slurry tanker and precision planter
2	Coupling between the vehicle and slurry tanker	5	Precision planter
3	Slurry tanker		

3.4 MULTI-Boom

The machine controls multiple metering units and also has different booms. Multiple products can also be applied.
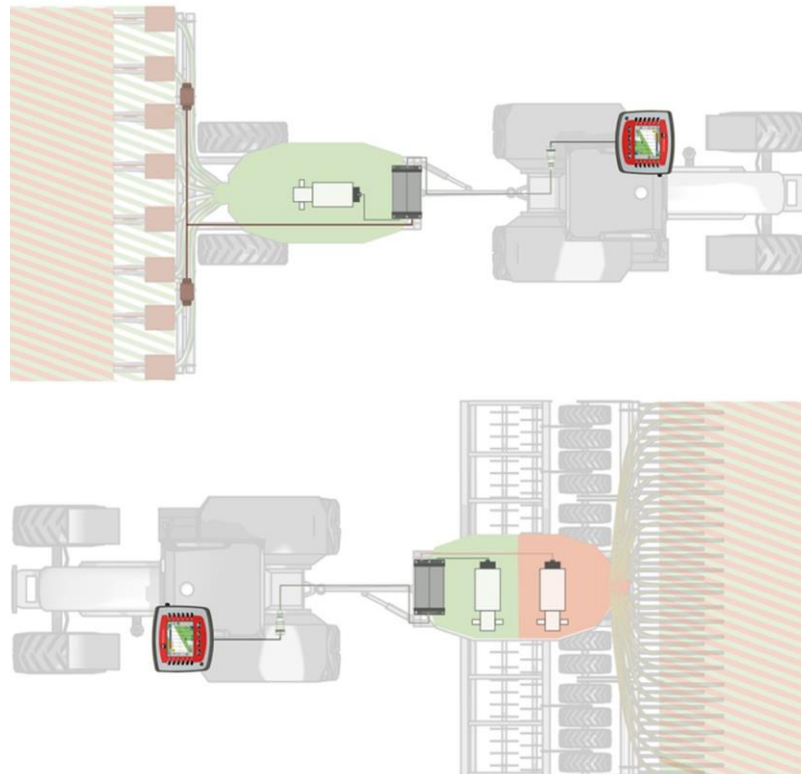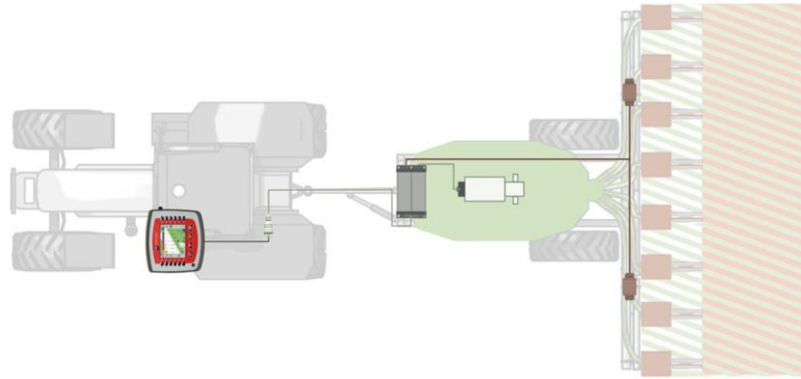

Example: Planter/seeder with different booms

In this case, multiple metering units must use the same prescription map:

- Instructions for shape [➜ 10]
- Instructions for ISO-XML [➜ 13]

3.5 MULTI SECTION-Control

The machine supports MULTI-Device or MULTI-Boom and allows for automatic section control for every work point. For each work point, a separate track is saved.

Example: Planter/seeder with automatic section control

In this case, one metering unit uses one prescription map:

- Instructions for shape [➜ 10]
- Instructions for ISO-XML [➜ 13]

4 Configuring the regulation of the target rate

For the machine to be able to regulate the target rate based on your GPS position and a prescription map, you must link the metering unit on the machine with the prescription map created for that purpose.

Depending on the machine type, there is a different procedure for the regulation.

If a prescription map is missing

You don't have a prescription map for one or several metering units.

Regardless of the layout of the machine, you always have the option of working without a prescription map.
- You can define a constant target rate in ISOBUS-TC for each metering unit of a machine. [➔ 15] This target rate can be manually increased or reduced during operation.
- You can assign a fixed target rate in the job computer application. In this case, you may not enter a target rate in ISOBUS-TC.
- You can adopt a fixed target rate from a Farm Management Information System.

4.1 Working with shape prescription maps

When you are working with shape prescription maps, the operation can be divided into the following phases:

1. Configuring ISOBUS-TC and transferring data

2. Creating a field

3. Importing prescription maps

4. Creating a task

5. Starting a task

6. Assigning target rates

For Step 6, there are two options:
- If you are spreading/applying only one product, you can assign the prescription map to only one metering unit. If you do not assign a metering unit, the target rate from the prescription map will be used by all metering units.
- If you are spreading/applying multiple products, assign the respective prescription map to the proper metering unit. Please note that you can only assign metering units that support the respective units (e.g. l/ha, seeds/ha, kg/ha).

4.1.1 Configuring ISOBUS-TC and transferring data

Procedure

1. Copy a shape prescription maps to the "SHP" folder on the USB memory device.

2. Insert the USB memory device into the terminal.

3. - Open the ISOBUS-TC application.

4. Tap "Settings".

5. Ensure that the "Operating Mode" parameter is set to "Extended".

6. If the ⬚ function icon appears, tap it. If not, skip this step.
   ⇨ A "taskdata" folder will be created on the SD card.

7. ⬚ - Return to the start screen of the application.

4.1.2 Creating a field

Procedure

1. Tap "Fields".
   ⇨ A list with already created fields appears.

2. ⬚ - Create a new field.
   ⇨ A form for entering the data appears.

3. Enter the designator (field name).

4. ⬚ - Exit the screen.
   ⇨ You will be asked whether you want to save the changes.

5. Confirm.

⇨ A list of created fields appears. The new field appears at the bottom end.

4.1.3 Importing prescription maps

Procedure

1. Tap the field for which you want to load the prescription map.
   ⇨ The field properties appear. You can see the previously entered data and several function icons on the side.

2. ⬚ - Open the import view.

3. Tap "Data type".
   ⇨ A list with possible data types will appear.

4. Select "Prescription map".

5. Tap "File selection".

6. Select the prescription map.

7. When a prescription map is imported for the first time, first tap "Column selection" to choose the column with the target rates, then tap "Unit selection" to choose the units. For future imports, these values will be automatically selected.

8. If you want to spread/apply several products on the field, you can load multiple prescription maps.
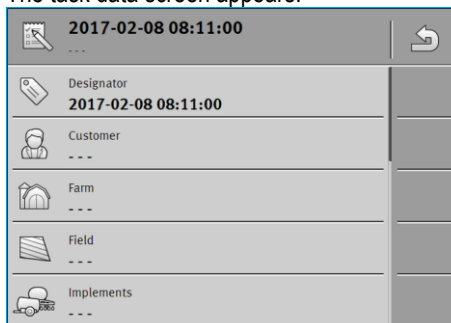
9. ⬚ - Return to the start screen of the application.

4.1.4 Creating a task

Procedure

1. Tap "Tasks".

2. - Create a new task.

⇨ The task data screen appears:

3. Tap "Field".

4. Select the field that you want to process. Only fields that you created in the master data are displayed.

5. - Exit the form.

6. In this step, ignore the "Implements" and "Target rates" categories. When starting the task, the terminal automatically recognizes which implements are connected. Then you can also enter the target rates.

7. - Exit the form.

⇨ The following message appears: "Do you want to save your changes?"

8. Confirm.

⇨ You have created a task and selected the field to be worked.

4.1.5 Starting a task

Procedure

1. - Start the task.

⇨ The icon for the task changes its colour.

⇨ You have started the task.

⇨ In the "Implements" category, the connected ISOBUS job computer and the ME Tractor-ECU now appear.

4.1.6 Assigning target rates

Procedure **Assigning target rates**

1. Tap "Target rates".

⇨ A list of target rates and prescription maps appears.

⇨ In the list, you now see the identifications of the prescription maps stored in the field data.

⇨ Target rates that have not yet been assigned to a metering unit are marked with the

following icon:

2. You now have two options:

3. **Option a**: If the machine only spreads/applies one product, exit this screen with ⮌ . In this case, the prescription map will not be assigned to a metering unit. All metering units then automatically use the same prescription map. The configuration is now complete.

4. **Option b**: If the machine spreads/applies different products and the task therefore contains multiple prescription maps, you must assign them to the metering units. Proceed with the following steps.

5. Tap the top line.
   ⇨ A form for entering the target rate appears. The lines "Quantity", "Unit" and "Product" contain values from the prescription map.

6. Tap "Implement element".

7. Select the metering unit that should work with the prescription map.

8. ⮌ - Exit the form.
   ⇨ You have assigned a prescription map to a metering unit.

9. Repeat the procedure for all prescription maps in the list.

10. ⮌ - Exit the form.
    ⇨ You have started a task with a prescription map.

⇨ When you now drive to the field and activate the machine, the target rate matching the GPS position will be transmitted to the ISOBUS job computer.

4.2 Working with ISO-XML prescription maps

If you plan the tasks in an FMIS and transfer them to the terminal as Taskdata.xml, you only need to ensure that each prescription map is assigned to the proper metering unit.

To do so, the following options are available:

- If you are spreading/applying only one product, the prescription map is not assigned to a metering unit. As a result, it will be used by all metering units.
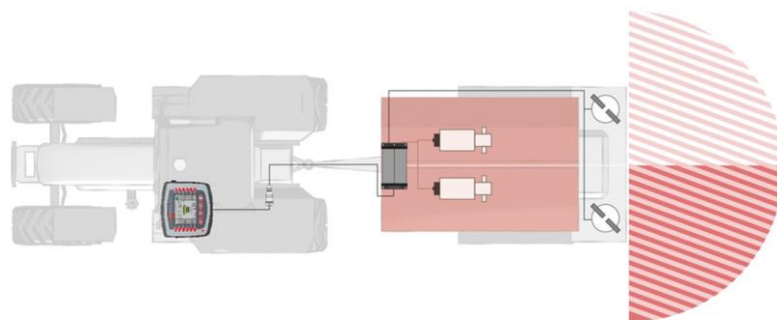
Fertilizer spreader: The same fertilizer is spread on the left and right. The rate depends on the prescription map.

- If you are spreading/applying multiple products, assign each prescription map or each target rate to the proper metering unit.
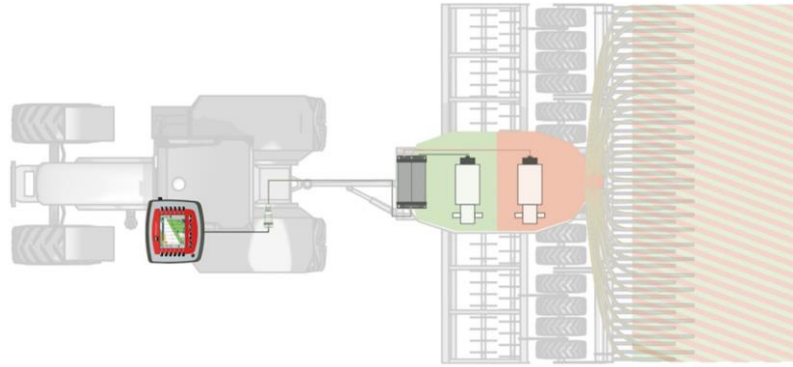
Planter/seeder: Liquid fertilizer and seed based on different prescription maps.

Procedure

If you have a machine that has more than one product and more than one metering unit, proceed as follows:

☑ You have created a task in the FMIS, containing at least one prescription map.

1. Insert the USB memory device into the terminal.
   ⇨ The data is transferred from the USB memory device to the SD card.

2. In ISOBUS-TC, tap "Tasks".
   ⇨ The task list appears.

3. Tap the task.

4. [icon] - Start the task.

5. Tap "Target rates".
   ⇨ A list with target rates from the task appears.
   ⇨ Target rates that have not yet been assigned to a metering unit are marked with the following icon: [icon] . These target rates must now be assigned to the metering units.
   ⇨ For the process, it makes no difference if the target rates come from one or several prescription maps.

6. You now have the following options:

7. **Option a**: If the machine only spreads/applies one product and only one product appears in the list, exit this screen with [icon] . In this case, the prescription map will not be assigned to a metering unit. All metering units then automatically use the same prescription map. The configuration is now complete.

8. **Option b**: If the machine spreads/applies different products but the task only contains one target rate, you must assign this target rate to a metering unit. Proceed with the following steps, like for "**Option c**". The target rate for the second metering unit must then be added manually with the [icon] button.

9. **Option c**: If the machine spreads/applies different products and the task therefore contains multiple target rates, you must assign them to the metering units. Proceed with the following steps.

10. Tap the line with one of the target rates.
    ⇨ A form for entering the target rate appears. The lines "Quantity", "Unit" and "Product" contain values from the prescription map.
    ⇨ Change the value on the "Quantity" line.

11. Tap "Implement element".
   ⇨ Now all of the metering units appear to which you can assign a target rate and that support the selected units.

12. Select the metering unit that should work with the selected prescription map.

13. ↩ - Exit the form.
   ⇨ You have assigned a prescription map to a metering unit.

14. Repeat the procedure for all prescription maps in the list.

15. ↩ - Exit the form.
   ⇨ You have started a task with a prescription map.

⇨ When you now drive to the field and activate the machine, the target rate matching the GPS position will be transmitted to the ISOBUS job computer.

4.3 Assigning a constant target rate

A constant target rate is assigned to a metering unit when you want to work without a prescription map.

You can assign the target rate at the following places:
- In the Farm Management Information System.
- On the job computer.
- In the ISOBUS-TC application. This version is usually used when you create new tasks on the terminal.

Procedure

This is how to assign constant target rates to multiple metering units, if you not already done so through the job computer:

☑ You have started a task.

1. Tap "Target rates".

2. 🔧 - Add a new target rate.
   ⇨ A new form appears with the following fields:
      "Quantity", "Unit", "Implement element", "Product".

3. On the "Quantity" and "Unit" lines, successively enter the quantity to be spread/applied by the first metering unit and in which units. For example: 200 kg/ha.

4. Tap "Implement element".
   ⇨ A list appears with the metering units on the connected machine to which you can assign the target rate.

5. Select a metering unit to which the target rate should be assigned.

6. ↩ - Exit the form.
   ⇨ You will be asked whether you want to save the changes.

7. Confirm.

⇨ You have added a constant target rate and assigned it to a metering unit.

5   Configuring section control

The MULTI-Control function also enables section control on complex machines.
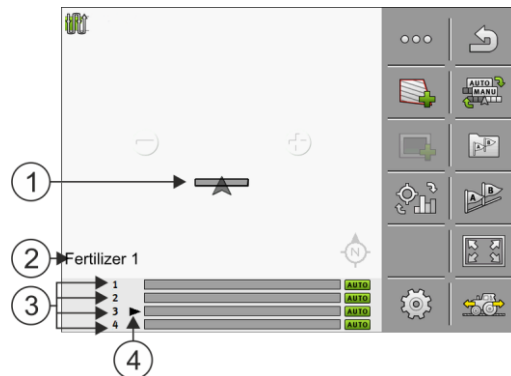
Examples:
- Field sprayer with multiple booms.
- Planter/seeder with a slug pellet spreader.
- Machine combinations, like slurry tanker and planter/seeder.

Configuration

No additional configuration steps are necessary to be able to use MULTI-Control for section control. If the job computer allows it, ISOBUS-TC can correctly detect the sections and transmit data between SECTION-Control and the job computer.

Example

Example: Machine with multiple booms/metering units

①	Vehicle icon	③	Respective metering unit/boom
②	Currently selected product	④	Currently selected metering unit/boom

Operation

When operating systems with MULTI-Control, the following options are available:
- Tap the vehicle symbol in the middle of the screen to select which metering unit or which boom should be displayed. The boom changes in the footer.
- Tap the product that appears at the bottom left to switch the display between several products (e.g. fertilizer types). The name of the product changes.

Depending on the design of the machine, one or the other method works.