

Installation and operating instructions

BASIC-Terminal



Version: 20110308



30322511-02-EN

Read and follow these operating instructions.

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

Imprint

Document Installation and operating instructions

Product: BASIC-Terminal

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1 For your safety

1.1 Basic safety instructions



Please read the following safety instructions carefully before using the equipment for the first time.

- Before maintenance or repair to the tractor, always disconnect the connection between the tractor and the terminal.
- Before charging the tractor battery, always disconnect the connection between the tractor and the terminal.
- Before performing any welding operations on the tractor or a trailed machine, always disconnect the power supply to the terminal.
- Keep the terminal and its accessory components in good working order.
- Do not make any unauthorised modifications to the equipment. Unauthorised modifications or
 use may impair operability and/or safety and reduce the service life of the unit. Modifications are
 considered unauthorised if they are not described in the product documentation.
- Never remove any safety mechanisms or signs from the machine.
- Observe all applicable regulations on accident prevention.
- Follow all recognised safety, industrial and medical rules as well as all road traffic laws.

1.2 Layout and meaning of warnings

All safety instructions found in these Operating Instructions are composed in accordance with the following pattern:





WARNING

This signal word identifies medium-risk hazards, which could potentially cause death or serious bodily injury, if not avoided.





CAUTION

This signal word identifies low-risk hazards, which could potentially cause minor or moderate bodily injury or damage to property, if not avoided.

NOTICE

This signal word identifies actions which could lead to operational malfunctions if performed incorrectly.

These actions require that you operate in a precise and cautious manner in order to produce optimum work results.

There are some actions that need to be performed in several steps. If there is a risk involved in carrying out any of these steps, a safety warning will appear in the instructions themselves.

Safety instructions always directly precede the step involving risk and can be identified by their bold font type and a signal word.

Example

1. NOTICE! This is a notice. It warns that there is a risk involved in the next step.



2. Step involving risk.

1.3 User requirements

- Learn how to operate the terminal correctly. The terminal must not be operated by anyone who
 has not read the Operating Instructions.
- Please read and carefully observe all safety instructions and warnings contained in these
 Operating Instructions and in the manuals of any connected machines and farm equipment.
- If there is anything within these Operating Instructions that you do not understand, please do not
 hesitate to contact us or your dealer. Müller-Elektronik's Customer Services department will be
 happy to assist you.

1.4 Intended use

BASIC-Terminal is intended exclusively for use in agriculture as well as in wine-growing, fruit-cultivating, and hop-growing operations. The manufacturer cannot be held responsible for any installation or use of the system that deviates from or exceeds the scope of intended use.

The manufacturer cannot be held liable for any personal injury or property damage resulting from such improper use. All risks involved in engaging in improper usage, lie solely with the user.

Intended use is also understood to include adherence to the conditions for operation and repair as prescribed by the manufacturer.

All applicable accident prevention regulations and all other generally recognised safety, industrial, and medical standards as well as all road traffic laws must be observed. Any unauthorised modifications made to the equipment will void the manufacturer's warranty.

1.5 EC declaration of conformity

This product has been manufactured in conformity with the following national and harmonised standards as specified in the current EMC Directive 2004/108/EC:

■ EN ISO 14982



2 About these Operating Instructions

2.1 Target group of these Operating Instructions

These Operating Instructions are intended for personnel entrusted with installing and operating the terminal.

2.2 Layout of operating instructions

The operating instructions explain step by step how you can perform certain operations with the product.

We use the following symbols throughout these Operating Instructions to identify different operating instructions:

Type of depiction	Meaning	
1.	Actions that must be performed in succession.	
2.		
₽	Result of the action. This will happen when you perform an action.	
⇒	Result of an operating instruction. This will happen when you have completed all steps.	
☑	Requirements. In the event that any requirements have been specified, these must be met before an action can be performed.	

2.3 Layout of references

If any references are given in these Operating Instructions, they will appear thus:

Example of a reference: $[\rightarrow 7]$

References can be identified by their square brackets and an arrow. The number following the arrow shows you on what page the chapter starts where you can find further information.



3 Product description

3.1 Performance description

Components The terminal is equipped with the following components:

Interface for controlling the ISOBUS jobcomputer.

Installed software The terminal comes with the following software installed as standard:

TRACK-Leader II – 50-hour trial version
 SECTION-Control – 50-hour trial version

HEADLAND-Control – 50-hour trial version

Optional software Optionally you can activate the following software:

TaskManager – task processing

TRACK-Leader II – parallel tracking system

■ TRACK-Leader TOP – automatic steering system

SECTION-Control – automatic boom section switching

• HEADLAND-Control – headland management.

• FIELD-Nav – navigation to the field

Please call our sales department if you want to unlock this optional software.

Differences between the two versions of the terminal

There are two versions of the terminal:

BASIC-Terminal item no.: 30322511BASIC-Terminal GSM item no.: 30322512

You can identify which terminal you have, from the ME item number on the nameplate $[\rightarrow 9]$.

The following table shows the differences in equipment for both versions.

BASIC-Terminal	BASIC-Terminal GSM	
-	GSM modem and GSM antenna	
-	Camera	

3.2 Scope of delivery

The following items are included in delivery:

- Terminal BASIC-Terminal
- Installation and Operating Instructions
- Bracket for mounting the terminal
- USB flash drive

3.3 System requirements

The following requirements must be met for the tractor to be used in conjunction with the terminal:

• The tractor must be ISOBUS-capable.



If your tractor is not ISOBUS-capable, you can upgrade it. Our staff will be glad to advise you on selecting compatible components.

3.4 Correctly interpreting information on the nameplate

On the reverse of the terminal you will find a nameplate sticker. On this sticker you can find all the information you need to definitively identify the product.

Have these details ready when you contact Customer Services.



Nameplate on the reverse of the terminal

1	Customer number If the product was manufactured for an agricultural machinery manufacturer, the agricultural machinery manufacturer's item number will be shown here.	4	Operating voltage The product may only be connected to voltages within this range.
2	Hardware version	5	Software version If you update the software, this version will no longer be up-to-date.
3	Müller-Elektronik item number	6	Serial number



4 Mounting and installation

Mount the terminal and all additional components in the following order:

- 1. BASIC-Terminal mount inside the tractor cab.
- 2. Connect the terminal to the basic equipment.
- 3. Connect the terminal to other components.

Refer to the following chapters to learn how to perform these steps.

4.1 Instructions on retrofitting

Instructions on how to retrofit electrical and electronic farm equipment and/or components

Agricultural equipment used today features electronic components and parts whose function can be affected by other farm equipment which emits electromagnetic waves. Such effects could lead to personnel being put in danger, if the following safety instructions are not adhered to.

Selecting components

When selecting components, make sure first of all, that the retrofitted electrical and electronic components comply with the current version of the EMC Directive 2004/108/EC and carry the CE marking.

User responsibility

When retrofitting a machine with electrical and electronic farm equipment and/or components connected to the vehicle's electrical system, it is your own responsibility to check whether the installation causes interference with the vehicle's electronic system or other components. This applies, in particular, to the electronic control of:

- EHR,
- front linkage,
- · take-off shafts,
- engine,
- gear.

Additional requirements

The following requirements must be met in order to retrofit mobile communication systems (e.g. radio, phone):

- All farm equipment must be approved and installed in accordance with the regulations applicable
 in the respective country (e.g. in Germany, the Federal Approvals Office for Telecommunications
 (BZT)).
- The equipment must be installed as a fixed installation.
- The operation of portable or mobile farm equipment in the interior of the vehicle is only permitted via a connection to a permanently installed exterior antenna.
- The transmitting part must be spatially separated from the vehicle's electronic system.
- When attaching the antenna, pay attention to proper installation, including a sound ground connection between the antenna and the vehicle's ground wire.

For information on wiring and installation as well as the maximum allowable current consumption, please also refer to the installation guide provided by the machine manufacturer.



4.2 Mounting the terminal in the tractor cab

NOTICE

Electromagnetic interference

The operation of the terminal may be impaired by electromagnetic waves emitted by other farm equipment.

Mount the terminal at least 1 m away from the radio antenna or from a radio device.

Procedure

1. Screw the bracket to the terminal.



Mount the terminal with the bracket installed inside the tractor cab.
 For instance, you can use the ME base console for this purpose.
 The base console is not included with the terminal. This is included in the delivery content of the ISOBUS basic equipment [→ 13].



Base console

4.2.1 Screwing on the GSM antenna

The GSM antenna transmits information to the FarmPilot portal via a mobile phone network.

Procedure

- 1. NOTICE! There is a very sensitive contact pin in the centre of the GSM antenna. Make sure not to damage the contact pin when screwing on the GSM antenna.
- 2. Screw the GSM antenna onto the top of the terminal.



4.2.2 Terminal ports



Reverse of the terminal BASIC-Terminal

1	GSM antenna port Only for terminals with a GSM modem installed. Item no. 30322512	6	USB port USB 1.1
2	Not currently in use	7	SIM card slot
3	Port for analogue camera Only for terminals with a GSM modem installed. Item no. 30322512	8	Port B CAN bus port To connect a working position sensor for TRACK-Leader 2
4	Port for analogue camera Only for terminals with a GSM modem installed. Item no. 30322512	9	Port A CAN bus port To connect the ISOBUS basic equipment.
5	Covering cap for USB port Prevents dust from entering the USB socket.	10	Port C Serial port RS232

4.3 Connecting the terminal to the basic equipment

NOTICE

Risk of damage when using non-standard basic equipment.

Connecting the terminal to non-standard basic equipment may damage both the terminal and the basic equipment.

- Before connecting the terminal to any existing basic equipment, check that the equipment conforms to ISO 11783.
- Do not connect the terminal to any basic equipment that does not comply with ISO 11783.



4.3.1 Checking the ISOBUS compatibility of the basic equipment

The basic equipment provided by Müller-Elektronik is ISO 11783-compatible and labelled with the following sticker on the ISOBUS socket:



4.3.2 Selecting the correct basic equipment

You must select basic equipment that matches the fittings of the vehicle in which the terminal BASIC-Terminal is to be installed.

The following types of basic equipment are available:

- Basic equipment for ISOBUS tractors
- Basic equipment for tractors without signal capture
- Basic equipment for retrofitting tractors and for signal capture.

Basic equipment for ISOBUS tractors

Item name: Basic equipment BASIC – Terminal / -TOP for ISOBUS tractors (ISO 11783) with ISOBUS terminal connector

(Item no.: 30322541)

Suitable for:

 Tractors with a power socket for connecting the ISOBUS basic equipment. The power socket must conform to ISO 11783.

In this case, only one connecting cable is required to link the terminal to the tractor bus and the power supply.

Basic equipment for tractors without signal capture

Item name: Basic equipment BASIC - Terminal / -TOP without tractor jobcomputer

(Item no.: 30322550)

Suitable for:

Tractors without signal capture.

Basic equipment for retrofitting tractors and for signal capture.

Item name: Basic equipment BASIC - Terminal / -TOP with tractor jobcomputer

Suitable for retrofitting tractors and for signal capture.

Connecting the terminal to the basic equipment



This basic equipment is available in two models:

- Connection via an adapter cable to the tractor's existing signal socket (DIN 9684.1 / ISO 11786). (Item no.: 30322560)
- Equipping the tractor jobcomputer with sensors (km/h transmission, km/h radar, PTO speed and work position). This equipment offers the possibility of fitting the tractor with a front and rear power socket. (Item no.: 30322565)

4.3.3 Connecting the terminal to the basic equipment

Procedure

- 1. Insert the 9-pin cable of the basic equipment into the 9-pin socket A on the terminal.
- 2. Tighten the safety screws on the connector.



5 Basic control principles

5.1 Getting to grips with the controls



Terminal controls

1	Rotary knob	3	Keys
2	Function keys		

Controls

Rotary knob

The rotary knob is located in the top right hand corner of the terminal.

Control with the rotary knob may vary slightly between the different applications.

You can use the rotary knob to perform the following actions:



Turning the rotary knob:

- Move the cursor up and down.
- Change a parameter value.



Pressing the rotary knob:

- Click on the selected line.
- Activate parameter.
- Confirm input.

Function keys

Operating the function keys is the same across all applications.

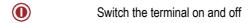


Performing the functions depicted on the display





Keys



Has no function

Has no function

Esc Exit screen

Cancel input

Hide warning messages and alerts

Open the "Selection menu" application

Exit the "Selection menu" application

5.2 Using the function keys

Whenever you use the function keys, you will activate the function depicted on the adjacent function icon.

⚠ CA

CAUTION

Danger of pressing the function keys without care

When pressing function keys, components of the connected machine can be moved or activated. As a result, people can be injured and property damaged.

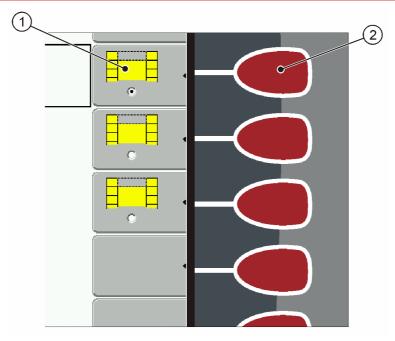
Before pressing a function key:



- Make sure you know what will happen when you press the function key.
- Consult the Operating Instructions of the connected machine or of the agricultural equipment to establish what dangers could arise from pressing that key.
- Fulfill all the measures described in the machine's Operating Instructions in order to avoid danger.
- Only press the function key when you are sure that no danger is posed to people or property.

When you press a function key, the function / operation depicted on the function icon will be performed.





Using the function keys



Example

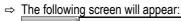
When you press the function key 2, the function depicted on the function icon 1 will be activated.

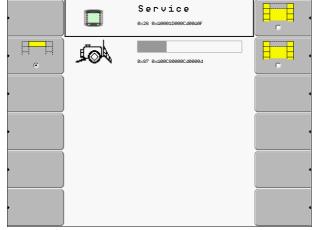
If not function icon appears next to a function key, this means that this function key has no function at present.

5.3 Initial start-up

Procedure

- 1. Installing and connecting the terminal.
- 2. O Switch on the terminal.
- 3. Wait for approx. 15 seconds until all applications have been loaded.
- 4. Open the "Selection menu" application.







- ⇒ You are now in the selection menu.
- ⇒ Now the connected jobcomputers will be loaded. The progress of this process is indicated by the progress bar next to the jobcomputer icon. The time taken to complete this process depends on the number of connected jobcomputers.
- 5. Wait until all jobcomputers have been loaded.



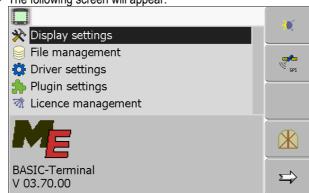
All jobcomputers are loaded when no more progress bars are displayed.

- 6. In the selection menu you can select which application you wish to display next.
- 7. Select the "Service" line. The "Service" line must be framed by a black square:



8. Click on the "Service" line.

⇒ The following screen will appear:



- \Rightarrow You have opened the "Service" application.
- **9.** Configuring the terminal in the Service application $[\rightarrow 23]$

5.4 Restarting the terminal

When restarting the terminal, you must give the connected jobcomputers enough time to restart as well. For this reason, always wait approx. 30 seconds after switching off the terminal before switching the terminal back on.

Procedure

1. O - Switch off the terminal.



- 2. Wait 30 seconds until the jobcomputers have also been switched off.
- 3. O Switch on the terminal.

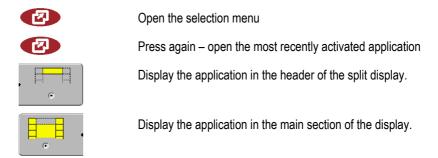


6 Opening applications in the selection menu

In the selection menu you can choose which application you wish to view on the display.

You can open the selection menu at any time. This will not close the application currently running.

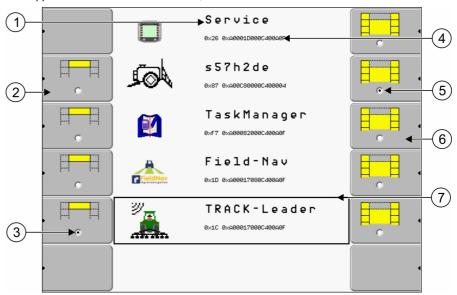
Controls



6.1 Display layout in the selection menu

The display is split into the following sections:

- Function icons left and right
- Applications section in the middle, between the function icons.



Sections in the selection menu

1	Name of an application	4	ISO ID of the application ISO name of the application
2	Function icons on the left Select an application which will later be displayed in the header.	5	Selection The selected application is displayed on the main display.
3	Selection The selected application is displayed in the header	6	Function icons on the right Open an application on the main display.
		7	Cursor Open the selected application using the rotary knob.



6.2 Opening applications

You can perform the following actions in the selection menu:

- Open an application.
- Display an application in the header of the split display.

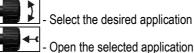
Procedure



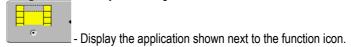
- 1. Set which application is to be displayed in the header of the split display.
 - ⇒ The function icon of the selected application is marked with a dot on the left hand side:



2. Start the application for the main display. There are several ways to do so: With the rotary knob:



Using the function keys on the right hand side:

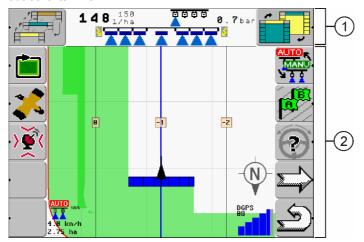


⇒ Both applications will appear on the display.

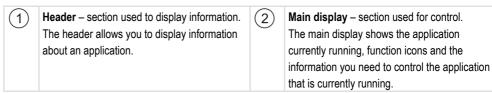
6.3 Segmentation of the display

The display of the terminal BASIC-Terminal is split into two sections.

A different application is diplayed in each section. This allows you, for example, to control the tractor on the field and monitor the field sprayer at the same time. This means that you will not need an additional terminal.



Segmentation of the display



Segmentation of the display



Controls

In the selection menu you can see which applications can be run with the split display.

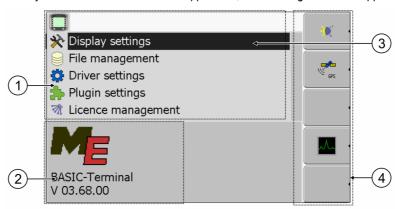
Function icon	Function
	Switch applications in the header section.
*****	Swap applications between the header section and the main section of the display.



7 Configuring the terminal in the Service application

In the "Service" application you can configure the terminal and activate the connected farm equipment.

Once you have started the "Service" application, the following screen will appear:



Start screen of the "Service" application

1	Main section Screen contents	3	Cursor Selects a line that can be clicked on with the rotary knob
2	Version number Name of the terminal and version of the installed software	4	Function icons section Icons that can be pressed on this screen.

7.1 Controls in the Service application

The "Service" application is controlled using the rotary knob and the function keys.

Controls

Some of the function icons explained here will only appear if a specific function is activated. This limits the information shown on the display to just the information that you need for your work.

Function icon	Meaning	Appears only if
	Scroll	There is one more page with function icons.
<u>\$</u>	Back	
)	Activate day mode	
10,	Activate night mode	
2 •	File cannot be deleted (grey)	Selected object cannot be deleted



Function icon	Meaning	Appears only if
22	Delete file (red)	Selected object can be deleted
GPS GPS	Configure GPS Receiver	GPS Receiver is activated
	Configure FarmPilot	FarmPilot portal is activated
	Open the Diagnostics screen	Diagnostics is activated
€× ·	Retrieve default values.	
	Display DGPS connection status	

7.2 Icons in the Service application

You will find the following icons in the Service application.

Icons



Function is activated



Function is deactivated

7.3 Changing the language

When you switch on the terminal for the first time, the text may appear in a foreign language (in German).

In this chapter you will learn how to change the language of the terminal.

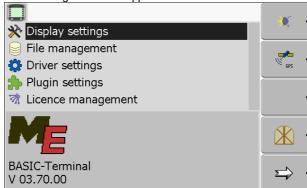
Procedure

- 1. O Switch on the terminal.
- 2. Press.





- 3. Click on "Service".
 - ⇒ The following screen will appear:



The texts on this screen may appear in a foreign language.

- 4. Click on "Terminal Einstellungen" ("Display settings").
- 5. Click on "Sprache" ("Language").
- 6. Select the abbreviation of your language.
- 7. Press.
 - ⇒ The language in the "Service" application will be changed.
- 8. Restart terminal.
- ⇒ The language in other applications will be changed.

7.4 Adjusting the brightness for day or night mode

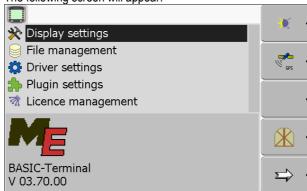
In this chapter you will learn how to adjust the brightness of the display for day or night mode.

Procedure

1. Open the "Service" application:

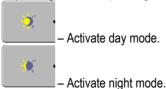






2. Change the operating mode.

Depending on which operating mode is currently active, you can use one of the function icons:



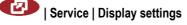
⇒ The brightness of the display will be adjusted immediately.

7.5 Configuring the basic display settings

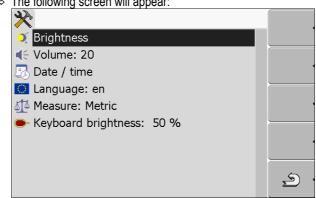
The basic display settings can be adjusted on the "Display settings" screen.

Procedure

1. Switch to the "Display settings" screen:



⇒ The following screen will appear:



2. Change the desired parameter.

List of parameters

Parameter	Meaning
Brightness	
Day	Adjust the brightness for day mode
Night	Adjust the brightness for night mode
Night mode	Switch night mode on and off



Parameter	Meaning
	0 = day mode is activated
	1 = night mode is activated
Volume	Adjust volume
Date / time	
Date	Set current date
Time	Set current time
Time zone	0 = Time zone: Greenwich Mean Time (GMT)
	1 = GMT +1 hour (Germany)
	-1 = GMT -1 hour
Language	Select language
Measure	Select measure system
	- metric
	- imperial
	- US American
	- user-defined
Keyboard brightness	Set level of keyboard brightness in percent

7.6 Activating and deactivating applications

In the Service application you can activate and deactivate other applications that are installed on the terminal.

The applications are installed in packages, in so-called plugins. A plugin can contain several applications.

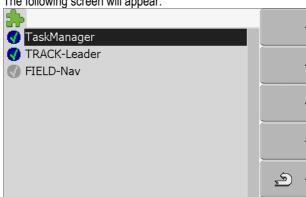
Name of the plugin	Includes the following applications
TaskManager	TaskManager
TRACK-Leader	TRACK-Leader II
	SECTION-Control
	TRACK-Leader TOP
FIELD-Nav	FIELD-Nav

Procedure

1. Switch to the "Plugin settings" screen:







- 2. Click on the desired plugin.
 - ⇒ The icon preceding the name of the plugin indicates whether the plugin is activated or deactivated.
- B. Exit screen.
 - ⇒ The following notification will appear: "Changes will be adopted after restart!"
- 4. Confirm.
- 5. Restart terminal.
- ⇒ All activated plugins will appear in the selection menu.

7.7 Activating licences for full versions of the software

Several applications are pre-installed on the terminal, which you can use for trial purposes for up to 50 hours. After this time has elapsed, they will be automatically deactivated. The amount of free usage time remaining is shown in brackets next to the name of the application.

To activate a licence you will require an activation number, which you will receive on purchasing an application from Müller-Elektronik. If you request the activation number by phone or by email, you will be required to give our staff the following information:

- Code Found under the name of the application on the "Licence management" screen.
- Serial number of the terminal Found on the nameplate on the reverse of the terminal.
- Item number of the terminal Found on the nameplate on the reverse of the terminal.

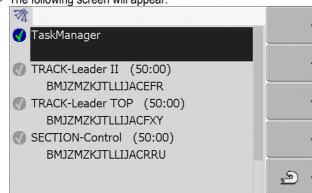
Procedure

The activation number is entered as follows:

1. Switch to the "Licence management" screen:

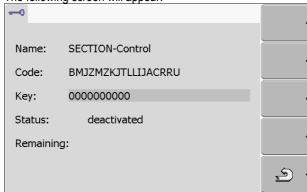
| Service | Licence management





2. Click on the desired application.

⇒ The following screen will appear:



- 3. Enter the activation number in the "Key" field. You will receive the activation number on purchasing a software licence.
- 4. Confirm
 - ⇒ The following icon will appear next to the application on the "Licence management" screen:



⇒ The application is activated. You can use the application without any restrictions.

7.8 Deleting files from the USB flash drive

NOTICE

Potential loss of data!

Deleted files cannot be retrieved!

• Think very carefully about which file you wish to delete.

On the "File management" screen you can delete files from the USB flash drive.

The "File management" screen only displays files that are stored in either of the following two folders on the USB flash drive:

- Screencopy contains all screenshots you have created
- Taskdata contains all task data for the "TaskManager" application

1. Switch to the "File management" screen:



Procedure





- 2. Click on "USB".
 - ⇒ The "Screencopy" and "Taskdata" folders will appear.
 - ⇒ If these folders fail to appear, it is because you did not create them on the USB flash drive.
- 3. Click on the desired folder.
 - ⇒ The contents of the folder will be displayed. A folder may either contain files or further folders. If nothing is displayed, the folder is empty.
- 4. Select the files to be deleted.



⇒ Deleting file.

7.9 Deleting pools

You can delete the pools to speed up the terminal's operation.

Pools are the intermediate storage for the terminal. Pools are used to temporarily store graphics or text. Over time, the pools will become too large and slow down the operation of the terminal.

When to delete?

- After updating the software of a connected jobcomputer.
- If the terminal operates more slowly than usual.
- When asked to do so by Customer Services.

Procedure

1. Switch to the "File management" screen:



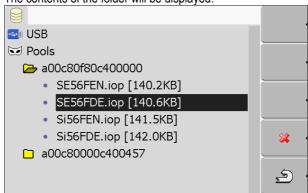
⇒ The following screen will appear:



- 2. Click on "Pools".
 - \Rightarrow The names of several folders will appear.
 - ⇒ If the pool is empty, nothing will appear.
- 3. Click on the desired folder.



⇒ The contents of the folder will be displayed.



The names of the folders are the ISO IDs of the applications whose temporary data they store.

4. Select the desired file.



6. • Restart terminal.

7.10 GPS Receiver

When you connect a GPS Receiver to the terminal, you must activate and configure it.

7.10.1 Activating the GPS Receiver

In order to activate the GPS Receiver, you must first activate its driver.

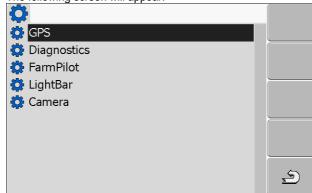
A driver is a small program that controls connected farm equipment. The drivers for the farm equipment supplied by Müller-Elektronik are pre-installed on the terminal.

Procedure

1. Switch to the "Driver settings" screen:



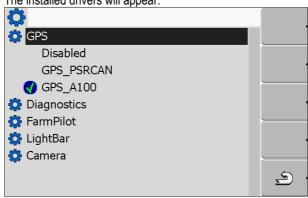
⇒ The following screen will appear:



- 2. Select "GPS".
- 3. Click on "GPS".



⇒ The installed drivers will appear.



- ⇒ Next to the active driver the icon will appear.
- ⇒ The driver "GPS_A100" for the DGPS Receiver A100 from Müller-Elektronik comes activated as standard.
- 4. Select the line containing the correct antenna driver: GPS_A100 – if the DGPS Receiver was connected directly to the terminal (port C) GPS_PSRCAN – if the GPS Receiver was connected via the CAN-interface, i.e. to a jobcomputer.
- 5. Click on the selected line.
 - ⇒ Next to the driver the icon will appear
- 6. Restart terminal.
 - ⇒ GPS Receiver is activated.
 - ⇒ The following function icon will be displayed on the start screen of the "Service" application:



⇒ You have activated the GPS Receiver.

7.10.2 Configuring the DGPS Receiver A100

The DGPS Receiver A100 is delivered ready-configured. However you can change the configuration. In this chapter you will learn how to do this.

Parameters

You can configure the following parameters in the process:

Baud rate

Setting for the speed at which the terminal sends data to the DGPS Receiver. The parameter sets the baud rate for the terminal.

The default baud rate is 19200.

This baud rate is suitable for the DGPS Receiver A100.

Satellite 1 and Satellite 2

Only required with the correction signal "WAAS/EGNOS".

Satellite 1 – primary DGPS satellite. The DGPS Receiver will connect to this satellite in the first instance.



Satellite 2 – secondary DGPS satellite. The DGPS Receiver will only connect to this satellite in the event that the primary satellite fails.

Your satellite selection will depend on which satellite currently has the best availability in your region.

- "Auto"

The software automatically selects the current best satellite. This setting is not recommended, as it slows down start-up of the DGPS Receiver.

Name of the satellite

Steering

This parameter activates the "Automatic steering" assistance function in the GPS Receiver.

■ "On'

Activates automatic steering assistance.

"Off"

Deactivates automatic steering assistance.

Correction signal

Type of correction signal for the DGPS Receiver.

"WAAS/EGNOS"

Correction signal in Europe and in North America.

"E-DIF"

Internal calculation of correction data.

This setting is required outside of the EU and the USA.

To use e-Dif, you will require a special version of the DGPS Receiver A100. You can order this this DGPS Receiver from Müller Elektronik with the item number 30302464.

Terrain compensation

Under this parameter the terrain compensation GPS TILT-Module is configured.

You can order the terrain compensation from Müller Elektronik with the following item number: 30302495.

Controls

Function icon	Function
€ × ·	Reset the configuration of the DGPS Receiver to default values
	Display DGPS connection status

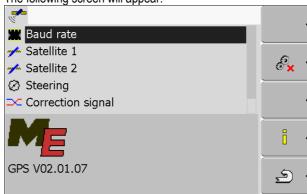
Procedure

You can configure the parameter as follows:

- ☑ The DGPS Receiver A100 from Müller Elektronik is connected and activated.
- ☑ The driver of the external LightBar "LightBar_ME" is deactivated. Otherwise the DGPS Receiver cannot be configured.
- ☑ The external LightBar is not connected.
- 1. Switch to the "GPS" screen:







- 2. Click on the desired parameter.
 - ⇒ A selection list will appear.
- 3. Click on the desired value.
 - ⇒ Next to the value the icon will appear.



- ⇒ For some parameters is it necessary to restart the terminal. In these cases the following notification will appear:
 - "Settings will be adopted after restart."
- ⇒ You have configured the DGPS Receiver.

7.11 Configuring the "GPS TILT-Module" terrain compensation

Procedure

- ☑ The "GPS TILT-Module" terrain compensation is connected.
- ☑ The driver of the external LightBar is deactivated.
- ☑ The external LightBar is not connected.
- 1. Measure the distance between the GPS Receiver and the ground surface.
- 2. Switch on the terminal.
- 3. Switch to the configuration screen of the terrain compensation:







- **4.** Enter the distance between the GPS Receiver and the ground surface in the line "GPS Receiver height".
- **5.** Position the tractor on a ground surface that is known to be level.
- 6. Click on the line "Null point calibration".
 - ⇒ The position of the terrain compensation on an even surface is being calibrated.
- ⇒ After calibration the angle 0 will appear in the line 'angle'. The angle displayed changes every time the tractor tilts.

7.12 Screenshots

A screenshot is a photo of the display.

If an error occurs when you are using the terminal, Customer Services may ask you to capture a screenshot.

A screenshot can be:

- emailed to Customer Services. Email address: service@mueller-elektronik.de
- sent to the FarmPilot portal (provided you have activated the FarmPilot portal)

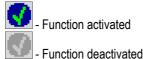
7.12.1 Configuring the screenshots function

Procedure

- ☑ You have activated the "Diagnostics" function. [→ 36]
- 1. Start the "Service" application:



- 2. Open the "Diagnostics" screen.
- 3. Click on "Screenshot settings".
- 4. Click on "Activate screenshots".
 - ⇒ The status of the function is displayed on the icon:



5. Click on "Storage location".



- ⇒ The line will be highlighted with a frame.
- 6. Select "USB" to save screenshots on the USB flash drive.
- 7. Select "Portal" to send screenshots to the FarmPilot portal.

7.12.2 Creating screenshots

Procedure

- ☑ You have configured the "Screenshots" function.
- ☑ If you want to save the screenshots to the USB flash drive, you will already have inserted the USB flash drive into the terminal.
- 1. Open any screen.
- 2. Press and hold the following keys briefly in the order depicted:



⇒ While the screenshot is being captured, the icon of a photo camera will be displayed in the centre of the display:



- ⇒ When the camera icon disappears, the screenshot has been created.
- ⇒ You will find the screenshot you captured in the location you specified as the "Storage location". The USB flash drive saves the screenshots in the folder "ScreenCopy".

7.13 Activating the "Diagnostics" function

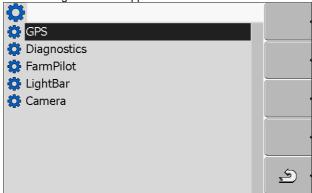
To activate the "Diagnostics" function, you must first activate its driver.

Procedure

1. Switch to the "Driver settings" screen:



⇒ The following screen will appear:



- 2. Click on "Diagnostics".
- 3. Click on the "DiagnosticsServices" driver.
 - ⇒ Next to the driver the icon will appear
- 4. Restart terminal.



⇒ The following function icon will appear on the start screen of the "Service" application:



⇒ You have activated the "Diagnostics" function.

7.13.1 Jobcomputer diagnostics

The screen "Jobcomputer diagnosis" contains a variety of information that is primarily important to Customer Services. Customer Services can use this screen to determine which versions of the hardware and software are installed on your terminal. This will speed up the diagnostic process if errors arise.

Sending diagnostic data to the portal

Only read this chapter once you have upgraded the BASIC-Terminal to a BASIC-Terminal TOP. The function described in this chapter can only be used on an upgraded terminal.

Customer Services may ask you to send diagnostic data to the portal. This allows Customer Services to gather detailed information about your terminal and therefore examine it more thoroughly.

Procedure

- ☑ You have activated the "Diagnostics" function.
- ☑ You have activated the FarmPilot portal.
- 1. Switch to the "Jobcomputer diagnosis" screen:





- Send diagnostic data.
- ⇒ The following notification will appear: "DeviceidentData transfer"
- ⇒ The data are being uploaded to the portal.
- 3. Wait until the "Sending DeviceIdentData" notification disappears.
 - ⇒ The data have been uploaded to the portal.
- **4.** If the process is taking too long, you can cancel the data transfer.
- 5. Cancel data transfer.

7.13.2 CAN-Trace settings

CAN-Trace is a function that logs the data exchange between the terminal and the connected jobcomputers. Customer Services can use the logged data for diagnostic purposes should any errors arise in the system.

If an error occurs when using the terminal, Customer Services may ask you to activate the CAN-Trace function.

Only activate this function if prompted to do so by Customer Services.

Procedure

1. Switch to the "CAN-Trace settings" screen:





- 1. Click on "Duration (min.)".
- **2.** Set the duration. Specify for how long communication should be logged after the terminal has been restarted. Communication can be logged for a duration of one to five minutes.
- 3. Click on "Storage location".
- 4. Select the storage location.
- 5. Select "USB" to save data on the USB flash drive. The USB flash drive must be inserted in the terminal.
- **6.** Select "Portal" to send data to the FarmPilot portal. FarmPilot must be activated before data can be transferred.
- 7. Click on "Activate CAN-Trace".
 - ⇒ The status of the function is displayed on the icon.
 - ⇒ The icon must appear next to "Activate CAN-Trace".
- - ⇒ After restarting the terminal, CAN-Trace will log the communication between the terminal and the jobcomputer.
- 9. Leave the terminal switched on until the set CAN-Trace duration has elapsed.
 - ⇒ The CAN-Trace function will be deactivated automatically.
- **10.** If you specified USB as the storage location, verify that the file "StartupTrace.txt" exists on the USB flash drive:



- 11. If this file is missing, you must run the CAN-Trace function again.
- **12.** Email the "StartupTrace.txt" file to Customer Services. If you chose "Portal" as the storage location, this file will have been sent automatically.

7.14 Activating an external LightBar

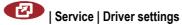
If you connected an external LightBar to the terminal, you must activate it.

To activate the external LightBar, you must first activate its driver.

You can order the external LightBar from Müller Elektronik with the following item number: 30302490.

Procedure

1. Switch to the "Driver settings" screen:





The following screen will appear:

GPS
Diagnostics
FarmPilot
LightBar
Camera

- 2. Click on "LightBar".
 - ⇒ The installed drivers will appear.
- 3. Click on the "LightBar_ME" driver.
 - ⇒ Next to the driver the icon will appear
- 4. Restart terminal.
- ⇒ You have activated the external LightBar.

If you activated the Section-Control or TRACK-Leader II applications, you must also activate the external LightBar in these applications. For instructions on how to do so, please refer to the operating instructions of these applications.

7.15 Camera

7.15.1 Activating a camera

If you have connected a camera or camera system to the terminal, you must activate it.

To activate a camera or a camera system, you must first activate its driver.

Procedure

1. Switch to the "Driver settings" screen:

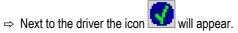


2. The following screen will appear:



- 3. Click on "Camera".
- 4. Click on the "Camera_ME" driver.





- 5. Restart terminal.
 - ⇒ The following function icon will appear on the start screen of the "Service" application:



6. You have activated the camera driver.

7.15.2 Operating the camera

Controls

Function icon	Meaning
2	Switch between several cameras
·	Rotate image
	Switch fullscreen on and off
	Save camera settings
<u>\$</u>	Exit camera

You can press the function keys even if the camera is set to fullscreen mode.

Procedure

- ☑ You have connected and activated the camera.
- 1. Switch to the "Camera" screen:



⇒ The following screen will appear



2. Use the function keys to control the camera.



Configuring FarmPilot 7.16

Only read this chapter once you have upgraded the BASIC-Terminal to a BASIC-Terminal TOP. The function described in this chapter can only be used on an upgraded terminal.

FarmPilot is an internet portal which allows software on a farm computer to exchange data with machines via a mobile phone network. Operating data are stored in a central location on the portal and are presented clearly to the user.

Before you can use FarmPilot in conjunction with your terminal, you must complete the following steps:

- Purchase a SIM card and have it activated.
- Activate FarmPilot
- Enter your FarmPilot access data

Refer to the following chapters to learn how to perform these steps.

7.16.1 **Activating FarmPilot**

To activate FarmPilot on your terminal, you must first activate its driver.

NOTICE

High costs from prolonged data transfer

If you do not have a flatrate in your mobile phone contract, continuous use of FarmPilot can lead to high costs.

If your flatrate has a data volume limit, continuous use of FarmPilot can guickly use up your data volume limit.

Deactivate the FarmPilot driver, when you are not using the portal.

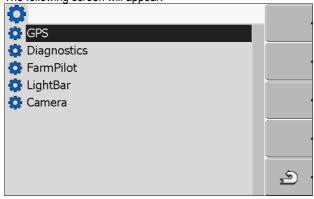
Procedure

1. Switch to the "Driver settings" screen:



| Service | Driver settings

⇒ The following screen will appear:



- 2. Click on "FarmPilot".
- 3. Click on the "TPD" driver.
 - ⇒ Next to the driver the icon will appear.



⇒ The following function icon will appear on the start screen of the "Service" application:



⇒ You have activated the FarmPilot portal.

You must now enter the access data for the FarmPilot portal.

7.16.2 Configuring the connection with FarmPilot

Before you can connect the terminal to FarmPilot, you must configure the connection.

You will receive this data when purchasing the FarmPilot access data.

Parameters

You will require the following parameters for the configuration:

Username

Username for FarmPilot.

Password

Password for FarmPilot.

Provider

Opens a screen where the GPRS connection can be configured.

With most mobile phone providers, this configuration occurs automatically.

If the access data for the GPRS connection differ with your provider, you can configure the connection manually.

You can find precise instructions in the chapter:

Configuring the GPRS connection manually [→ 44]

Server

Server address

The server address cannot be altered.

Log

Switches logging on and off.

Switch on logging only when prompted to do so by Customer Services.

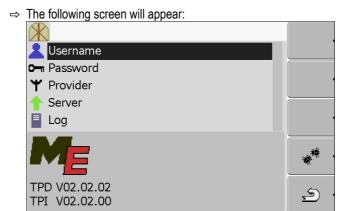
Procedure

1. Open the "Service" application:



Open the access data screen for FarmPilot.



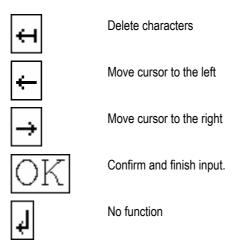


- 3. Click on the line with the desired parameter.
- **4.** Configure parameter.

7.16.3 Entering data in the FarmPilot access data section

Controls

Below the characters, you will find 5 icons which will assist you when entering the data.



Procedure

1. Switch to the "FarmPilot access data" screen:

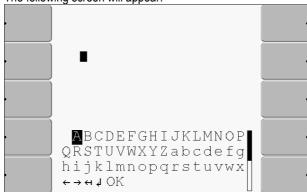




2. Click on the selected line.



⇒ The following screen will appear:



- 3. Enter the username.
- 4. Select the desired character.
- 5. Click on the selected character.
- 6. When you have finished entering all the characters, select and click on "OK".

7.16.4 Configuring the GPRS connection manually

In this chapter you will learn how to configure the GPRS connection manually.

With most SIM cards, the GPRS connection will be configured automatically.

The GPRS connection must be manually configured in the following instances:

- You have bought a new SIM card. The terminal does not recognise your mobile phone provider.
- Your mobile phone provider has altered the access data for the GPRS connection.

Parameters

The values you must enter for the parameters, depend on your mobile phone provider. You can find out these data from your mobile phone provider.

You will require the following parameters for the configuration:

Country

Country for which the SIM card is configured. Cannot be altered.

Provider

Name of the mobile phone provider. Appears automatically.

With unrecognised cards, you can enter the name of the mobile phone provider yourself.

APN

Abbreviation of "Acces Point Name".

Address of the GPRS access point.

DNS 1 and DNS 2

Abbreviation of "Domain Name System".

IP addresses of the first and second DNS servers

Number

Dialling code for the modem. Cannot be altered.

Username



Username for the GPRS connection.

Password

Password for the GPRS connection.

Controls

Function icon	Function
€× ·	Retrieve default values.

Procedure

You can configure the mobile connection as follows:

- ☑ You have inserted the SIM card.
- ☑ You have activated the FarmPilot portal.
- 1. Switch to the configuration screen for the GPRS connection:



⇒ The following screen will appear:



2. Set GPRS connection parameters.



8 Maintenance and servicing

NOTICE

This product does not contain any components which require maintenance or repair! Never unscrew the casing!

8.1 Servicing and cleaning the terminal

- Press the keys with your fingertips. Avoid using your finger nails.
- Only clean the product with a soft, damp cloth.
- Only use clear water or glass cleaner.

8.2 Disposing of the unit



When it has reached the end of its service life, please dispose of this product as electronic scrap in accordance with all applicable EU waste management directives.

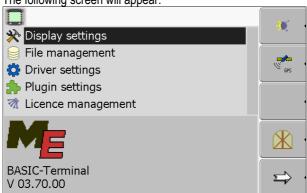
8.3 Checking the software version

Procedure

1. Open the "Service" application:



2. The following screen will appear:



3. The software version can be found below the ME logo.

8.4 Technical specifications

8.4.1 Technical specifications of the terminal

Parameter	Value
Operating voltage	10 - 30 V
Operating temperature	-20 - +70 °C



Parameter	Value	
Storage temperature	-30 - +80 °C	
Weight	1.3 kg	
Dimensions (W x H x D)	220 x 210 x 95 mm	
Protection class	IP 54 in accordance with DIN 4005	0/15
EMC	In accordance with ISO 14982 / PR	REN 55025
ESD protection	In accordance with ISO 10605	
Power input	At terminal: 30322511 without external equipment	Typically: 0.4 A at 13.8 V
	At terminal: 30322512 without external equipment	Typically: 0.5 A at 13.8 V
Display	VGA TFT colour display; display siz	ze (diagonal): 14.5 cm ; resolution:
Processor	32-bit ARM920T up to 400 MHz	
RAM	64 MB SDRAM	
Boot USB	128 MB	
Internal clock	Buffered by capacitor, keeps the tir power supply.	ne for 2 weeks without an external
Keyboard	17 keys plus rotary knob	
Outputs	2 x CAN 1 x USB 1 x RS232	
	2 x M12 for two analogue cameras	(optional for item no.: 30322512)

8.4.2 Pin assignment of ports A and B

Ports A and B are both CAN-interfaces.

Port B is not currently connected.

Pin assignment of the 9-pin D-sub port of the ISO agricultural machinery interface (CAN).

Pin no.:	Signal:	Pin no.:	Signal
1	CAN_L	6	- Vin* (GND)



Pin no.:	Signal:	Pin no.:	Signal
2	CAN_L*	7	CAN_H*
3	CAN_GND*	8	CAN_EN_out**
4	CAN_H	9	+ Vin*
5	CAN_EN_in		

- +Vin = voltage supply (+)
- -Vin = ground (-)
- * The signals marked with * correspond to the CiA assignment (CAN in automation).

The two signals CAN_L and CAN_L* or CAN_H and CAN_H* are linked internally and used to loop the CAN bus through.

Assigning CAN_EN_in to the supply potential (= +Vin) enables the terminal to be switched on.

When switched on, the terminal supplies voltage to the CAN_EN_out (minus approx. 1.2 V), which is required to activate the connected jobcomputers.

The signals '-Vin' and 'CAN_GND' are directly linked with both connectors, therefore it is crucial to avoid differences in potential between the pins of these two connectors.

8.4.3 Pin assignment of port C

Port C is an RS232 interface



CAUTION

Damage to the equipment caused by short circuit

Pin 4 of port C is live. The voltage depends on the operating voltage of the terminal and is used to supply the DGPS Receiver A100 from Müller Elektronik.

Other GPS Receivers may suffer damage if connected to this port.

Before connecting a different GPS Receiver:



- Check what voltage the terminal is connected to (12 V or 24 V).
- · Check the pin assignment of the GPS Receiver.
- Check the allowable voltage for the GPS Receiver.
- Compare the terminal voltage to the allowable voltage for the GPS Receiver.
- · Compare the pin assignment.
- Only connect the GPS Receiver to the terminal, if the voltage range and pin assignment of both devices don't differ from each other.

Pin no.:	Signal
1	DCD
2	/RxD



Pin no.:	Signal
3	/TxD
4	Operating voltage minus 0.7 volt
5	GND
6	DSR
7	RTS
8	CTS
9	RI

When switched on, the terminal routes current to the farm equipment that is connected via the RS232 connector. The voltage of the RS232 connector is dependent on the operating voltage of the terminal.

When connected to a 12 V battery, the terminal will transfer approx. 11.3 V to the connected equipment.

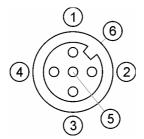
When connected to a 24 V battery, the terminal will transfer approx. 23.3 V to the connected equipment.

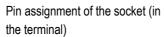
The use of a GPS Receiver only requires the signals RxD and TxD as well as GND.

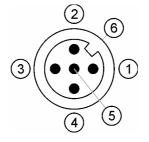
8.4.4 Pin assignment of camera ports 1 and 2

Ports 1 and 2 are used to connect an analogue camera. The pin assignment is identical for both ports.

Ports 1 and 2 are 5-pin, A-encoded M12 sockets. Please refer to the following table for the pin assignment.







Pin assignment of the connector

Pin	Signal
1	Pin is exclusively intended for use by ME (do not connect anything)
2	GND
3	Pin is exclusively intended for use by ME (do not connect anything)
4	Video signal



Pin	Signal
5	Video screen
Outer sheathing	Screen



9 Notes