MatManager™

User Manual

MatManager™

User Manual

TECHNOLOGIES
PAVING INNOVATION

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About MatManager™ User Manual

Content and structure

This MatManager™ user manual has been developed to the operator to provide the necessary information to operate the MatManager™. The English version of this manual constitutes the original version, and can therefore be used as a reference in case of doubt regarding use or misuse of the system.

The user manual is a practical guide for mounting, operating and maintaining the MatManager™ system.

Safe use

Before the MatManager™ System is operated, this user manual should be studied carefully to ensure correct and safe use of the system. Particularly the section Safety Instruction p. 51 should be read thoroughly before use.

Getting thoroughly acquainted with the manual furthermore ensures the operator the full value of the system. The user manual should always be stored together with the system.

All products in the MatManager™ System are CE-marked and comply with regulations for security and reliability.

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MatManager™

All products in the MatManager™ System contain a model number/name, serial number and part number, so that each unit is easily identified and traceable. All relevant numbers should be stated, when contacting TF-Technologies regarding your product:

Example

Model number/name:	MatManager™
Serial number:	TF-67324
Part number:	S-51712

Contact information

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Symbol overview

This user manual uses a range of symbols and warning notifications throughout the manual to make the operator aware of important safety measures or information regarding operation. The following symbols are used in this manual:

Warning!

Indicates important information the operator must be aware of to avoid dangerous situations that can result in death or serious personal injury

Caution!

Indicates important information the operator must be aware of to avoid dangerous situations that can result in material damages

Tip

Indicates information regarding efficient and failure-free operation of the MatManager™ System

Step-by-step instructions

Indicates a step-by-step instruction, where a particular order of actions is required or recommended

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Introduction to MatManager™

Paving Quality System

MatManager™ is a paving quality system that enables the operator to monitor and document key quality parameters of the paving job.

The MatManager™ keeps track of material consumption with real-time measurements, so you can ensure that you are on target and prevent material overruns. It documents how many kg you have put down per m^2 paved, and registers instances of stop, start and loading to document your work flow.

Paving speed, paved distance and material temperature, as well as relevant weather parameters such as air temperature, wind speed, air pressure and humidity, are also continually registered and presented on the 7" graphical display.

The GPS logs all data with location coordinates to track the exact position of every piece of registered data.

After completing the paving job, the operator can export all logged data for data processing and analysis. A printable report of key data can also be made to validate that road specifications have been met.

The MatManager™ uses a range of different input sensors mounted on the asphalt paver to measure and calculate the key paving parameters. The data is collected via the MatManager™ Interface Box, and presented on the MatManager™ Control Unit screen.

The MatManager™ system continually undergoes significant development, and existing systems can be upgraded with new features as they are released.

Fig. 1 - MatManager™ Control Unit displays all key paving parameters throughout the paving job

System Overview

The MatManager™ paving quality system consists of three main system components:

- A MatManager™ Control Unit with a 7” colour display showing all key paving parameters throughout the job
- A MatManager™ Interface Box that gathers and computes all relevant data and information
- A range of different input sensors mounted on the asphalt paver

There are currently six different input sensor types in the Standard MatManager™ system:

- Weather station with GPS
- Mobile Data Transfer Module (optional)
- Screed width sensor
- IR Temperature sensor
- Distance sensor with distance wheel
- Tamper/Vibrator sensor

The MatManager™ Control Unit and all input sensors connect to the MatManager™ Interface Box located centrally on the machine.

It is possible to connect the MatManager™ directly to the speed or distance signal of the asphalt paver, instead of using the distance sensor and distance wheel that comes with the MatManager™ system. This may result in erroneous distance measurements, and faulty calculations of the system due to slip, as the wheels or tracks of the paver will tend to slide slightly when the paver is moving forward.

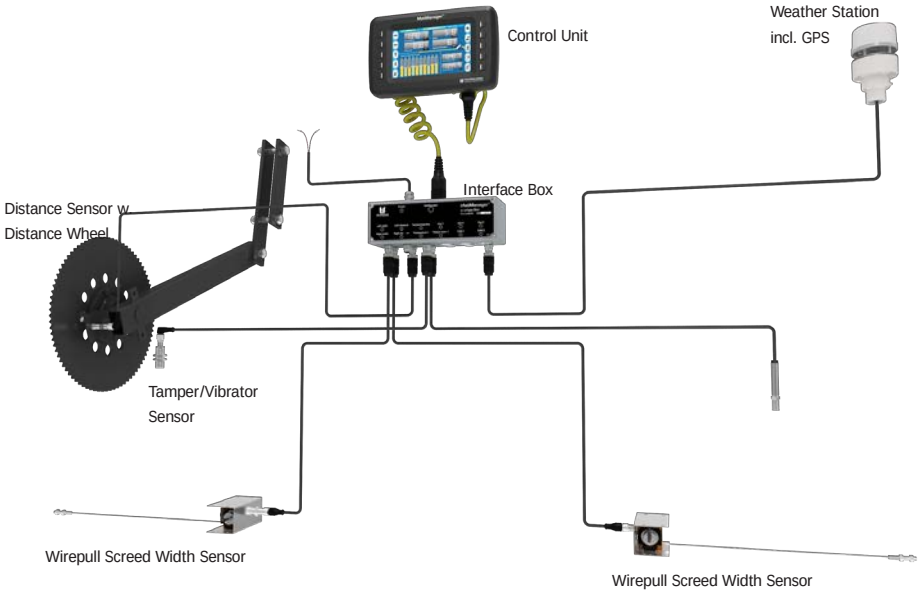
We strongly recommend the use of the distance wheel and distance sensor of the MatManager™ system for accurate measurements, and are unable to warrant correct system calculations, if the operator chooses not to do so

System Configurations

The MatManager™ system is available in two overall configurations. A standard system containing all sensors and all functionalities and a Light version with limited features that can be used as an entry-level system, or as an economical solution for those requiring less functionality.

Mobile Data Transfer is an optional addition to the standard MatManager™ sytem. The system can also be upgraded with other additional sensors and new features, as they are released.

S-60803 MatManager™ System

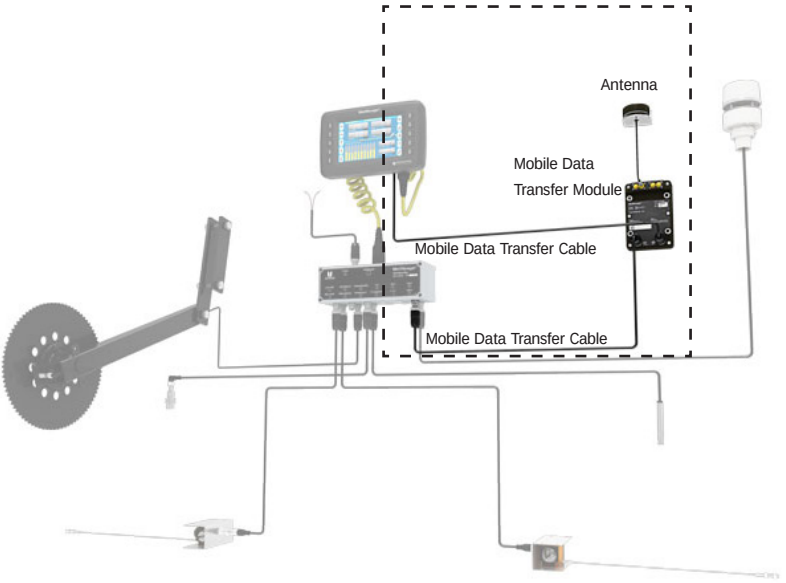


System includes

Pcs.	Description
1	MatManager™ Control Unit with Cable, Mounting and Carry Case
1	MatManager™ Interface Box
1	Weather Station incl. GPS with Cable and Mounting
2	Wirepull Screed Width Sensor with Cable
1	IR Temperature Sensor with Cable
1	Distance Sensor with Cable and Distance Wheel
1	Tamper/Vibrator Sensor with Cable
1	MatManager™ USB Stick

S-10130 Mobile Data Transfer System (Optional)

The Mobile Data Transfer System enables easy, safe and wireless transfer of all paving data collected in MatManager™ to MatWiser™ for further analyses and reporting (See page 34 for more info about MatWiser™.)



System includes

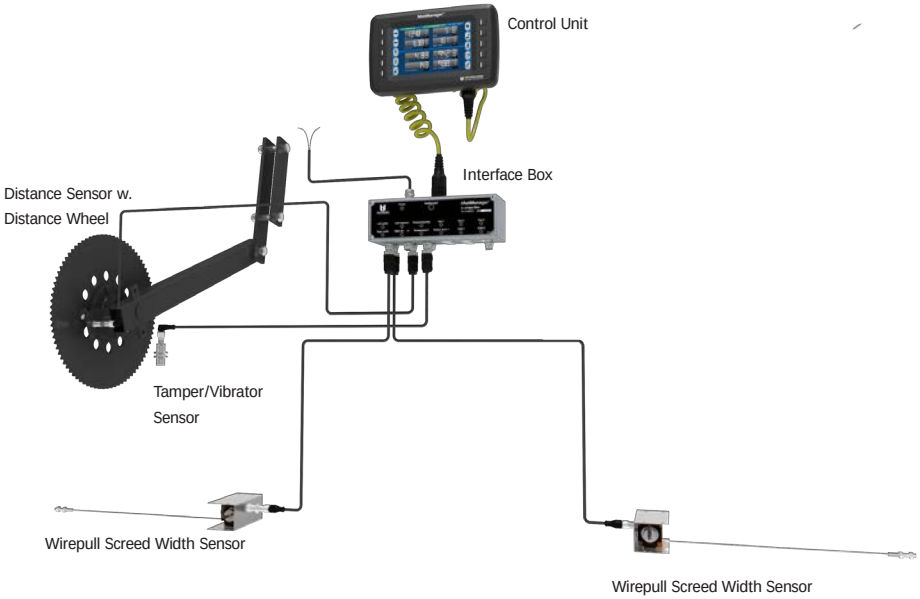
Pcs.	Description
1	Mobile Data Transfer Module incl. bolts for mounting
1	Antenna incl. Mounting Bracket
1	MatManager™ Mobile Data Transfer Cable
1	Interface box Mobile Data Transfer Cable
1	M12 Connector, 5 pin
1	M12 Connector, 4 pin
1	Socket for USB

Light Configuration

The MatManager™ Light system does not include IR temperature sensor, Weather Station and GPS, and the MatManager™ display has a limited user interface.

The MatManager™ Light configuration can subsequently be upgraded to the standard MatManager™ system, but cannot be upgraded with additional sensors and new features, without first upgrading to the standard MatManager™ system configuration.

S-60805 MatManager™ Light System



System includes

Pcs.	Description
1	MatManager™ Light Control Unit with Cable, Mounting and Carry Case
1	MatManager™ Interface Box
2	Wirepull Screed Width Sensor with Cable
1	Distance Sensor with Cable and Distance Wheel
1	Tamper/Vibrator Sensor with Cable
1	MatManager™ USB Stick

Installation

The MatManager™ System requires installation by a service technician from TF-Technologies or a technician in your local area appointed by TF-Technologies. Once the system is installed, it is ready to use.

The MatManager™ control unit should be disconnected and removed at the end of day for storage and protection. The control unit is easily removed or re-mounted by loosening the thumbscrew on the Mount Arm, and should be stored safely in the accompanying Carry Case.

The MatManager™ Interface Box and all sensors are designed for permanent mounting and should remain on the asphalt paver between paving jobs.

Fig. 7 - MatManager™ control unit should be stored in its accompanying Carry Case between paving jobs

Buttons and Symbols

The MatManager™ Control Unit has a touch screen display and ten buttons, five navigation keys on the left side and five function keys on the right side. Each button has the function shown by the icon next to it on the display.

Navigation keys		
A	Page flip	Press left and right arrows to flip between different sub-screens
B	Page scroll	Press up and down arrows to scroll in the text fields on the current screen
C	Help	Press the help button for assistance to appear in the bottom

Function keys		
D	Home	Press the home button to return to the home screen (as displayed) at any time
E	Load	Press the load button to manage loads, e.g. enter a load of material
F	Job	Press the job button to manage jobs, e.g. enter a new job
G	Export	Press the export button to export the registered data
H	Settings	Press the settings button to adjust any of the settings

How to read the MatManager™ display

The MatManager™ display has a fixed status line in the top of the screen. The rest of the screen is divided in two views, a top and a bottom view. The two views are separated by a blue line with a paver and a truck, indicating how much material is left in the current load.

Status line

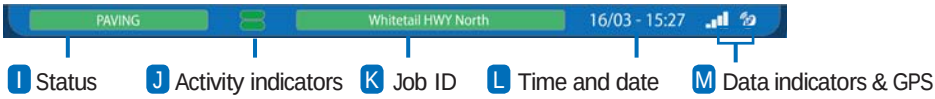
Top view

Indicator

Bottom view

Status Line

The status line displays basic information about the job, and is visible from all screens.

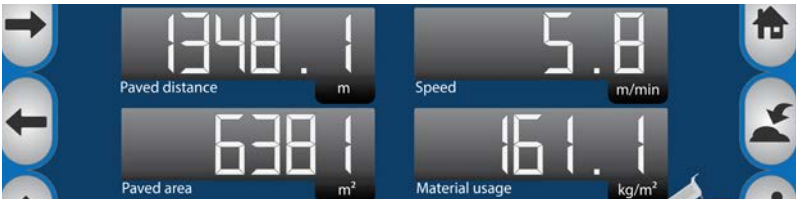


I Status	Shows whether the asphalt paver is paving “Paving” or has stopped “Pause”. Both activity indicators must be active to display “Paving” status
J Activity indicators	Top indicator shows status for Distance sensor, bottom shows status for Tamper/Vibrator sensor. Green indicates active. Red indicates not active
K Job ID	Displays ID of current job
L Time and date	Shows time and date in the format DD/MM - HH:MM
M GPS/Data signal	Left symbol shows signal strengh for Data Connection, right symbol shows status for GPS.

The input for the status line must be configured and calibrated by a service technician during installation of the MatManager™ system

Top View

The top view displays key information about the job, and remain visible when flipping through sub-screens.

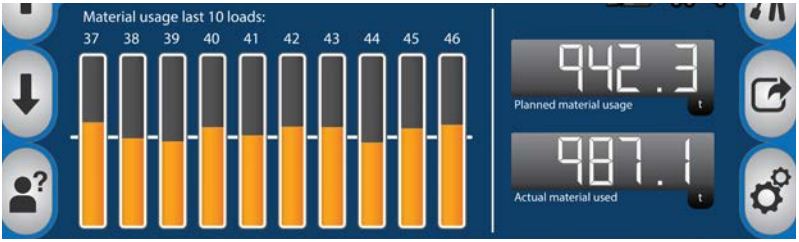


Indicator

The indicator displays how much material is left in the hopper. The paver will move all the way to the left, when a new load is added and slowly move towards the truck, as material is used and a new load required. This is a visual representation of the percentage left in the current load, if you are paving using the specified material usage.

Bottom View

The bottom view displays more detailed information about the job, and consists of a range of different sub-screens the operator can flip through using the left and right arrows.



The MatManager™ Home screen

Home Screen

Pressing the home button at any given time, will take you to the home screen shown below, when you are using the MatManager™.

Top View
Shows four values giving you real-time measures of distance, speed, paved area and material usage. The top view is visible from all sub screens.

Home

Planned material use based on the specification inputted for the job.

Actual material used.

These values are calculated based on all loads, except the current load. These two numbers should be close to each other for optimal paving.

Material usage for the 10 last used loads
Visual guide to see how close to the planned material usage you have been for each load, illustrated with yellow bars.

Yellow bar higher than the middle line: Indicates that you have used more material than specified.

Yellow bar below the middle line: Indicates that you have used less material than specified.

Material usage is average material use per m^2, from job start until last used load

Home Screen - MatManager™ Light

The home screen for the MatManager™ Light differs from the standard home screen due to the limited functionality of the Light version.

Pressing the home button at any given time, will take you to the home screen as shown below, when you are using the MatManager™ Light.

Top View
Shows four values giving you real-time measures of distance, speed, paved area and material usage. The top view is visible from all sub screens.

Home

Material counter
The calculated current material usage, based on either current load only or all loads entered on current job, at the given time. (This can be set in the Set Display menu, see p. 41)

Width
The current total width of the screed.

Remaining distance
The calculated remaining length left to pave, until a new load is needed.

Actual material used
This value is calculated based on all loads, except the current load.

The GPS indicator will always be RED in the MatManager™ Light system. If you wish to access this information, an upgrade is available. Please contact your local sales office

The MatManager™ sub screens

Width and Material counters

Press the right arrow once will access the screen shown below.

1x

Width
The current total width of the screed.

Material counter
The calculated, current material usage, based on either current load only or all loads entered on current job, at the given time. (This can be set in the Set Display menu, see p. 41)

Remaining time
The calculated remaining time until a new load is needed.

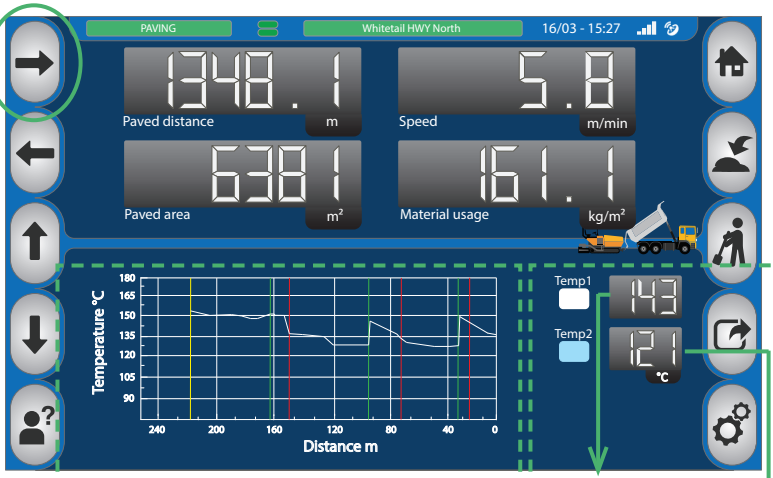
Remaining distance
The calculated remaining length left to pave, until a new load is needed.

This screen and information is not available in the MatManager™ Light system. If you wish to access this information, an upgrade is available. Please contact your local sales office

Work flow History and temperature

Press the right arrow twice, to get to the screen below. This gives you an overview of your work flow history - instances of stops, loads and material temperatures.

2x



Work flow history
Illustrates temperature readings and how many stops and new loads there has been for the last stretch of the paving job.

Temperature lines:
Temperature 1 (white): <IR Sensor measurements.
Temperature 2 (light blue): IR sensor measurements (only if installed).

Vertical event lines:
Red line indicates a stop in paving.
Green line indicates a new load.
Yellow line indicates a new load has been added while stopping.

Temperature 1
Measures the temperature from the IR Temperature sensor, typically placed by the auger.

Temperature 2
Temperature from additional IR Temperature sensor.
IR Temperature sensors are sold separately.

This screen and temperature information is not available in the MatManager™ Light system. If you wish to access this information, an upgrade is available. Please contact your local sales office

Load and Effectiveness

Press the right arrow three times to see a list of the last 5 loads, a total of the loads, their weight and at what time they were entered into the MatManager™. See example of the screen below:

3x

List of last five loads and a total of the loads, their weight and time they were entered into the MatManager™.

Material/hour
How much material have been used per hour since job start.

Material/eff. hour
How much material have been used while effectively paving for the current job.

Material/hour and Material/eff. hour should ideally be very close to each other. If they are not, it is a sign that there have been too many or too long stops in the process

Speed and Vibrator / Tamper

Press the right arrow four times to get to the graph below. This gives you historical and current data of paving speed and tamper/vibration rotation speed.
Whether this screen shows the values for vibrators or tampers depend on placement of the rotation sensor at time of installation.

4x

Work flow history
View of tamper/vibrator rotation speed relative to paving speed for the last stretch of the paving job.

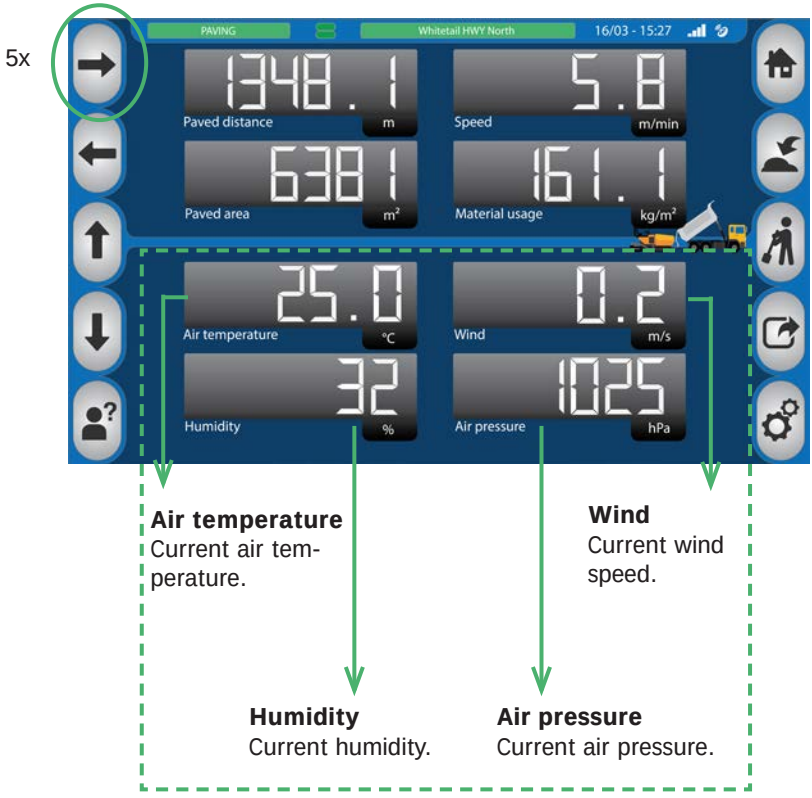
/ m
Current tamper/vibrator rotations per meter.

RPM
Current tamper/vibrator rotations per minute.

This screen and workflow, Tamper/Vibrator information is not available in the MatManager™ Light system. If you wish to access this information, an upgrade is available. Please contact your local sales office

Weather

Press the right arrow five times to see the menu for the weather station. Weather station is mounted on the roof of the paver, all measurements displayed in this screen are current values measured where the weather station is located. See example of the screen below:

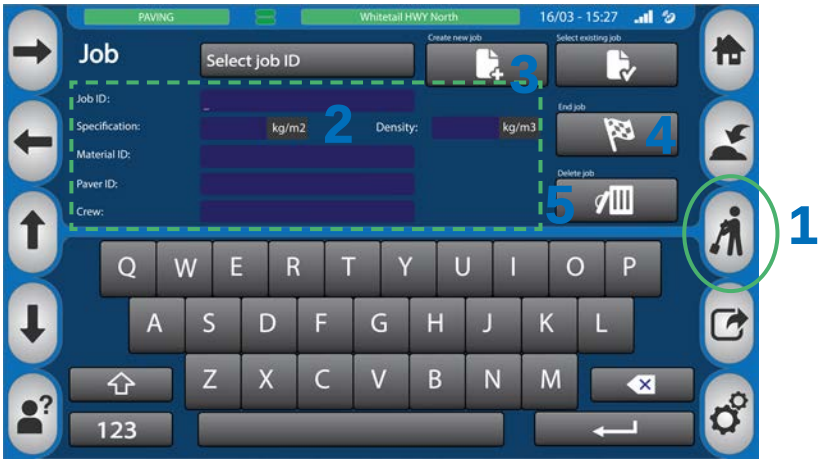


The Weather Station is not available in the MatManager™ Light system. If you wish to access this information, an upgrade is available. Please contact your local sales office

Daily Operation

Start a job

1. Press the “Job” button to access the Job menu. This is where you manage all jobs on the MatManager™
2. Enter information using the keyboard on the screen
   Material ID, Paver ID, Crew & Density is optional
3. Press “Create new job” to create the new job

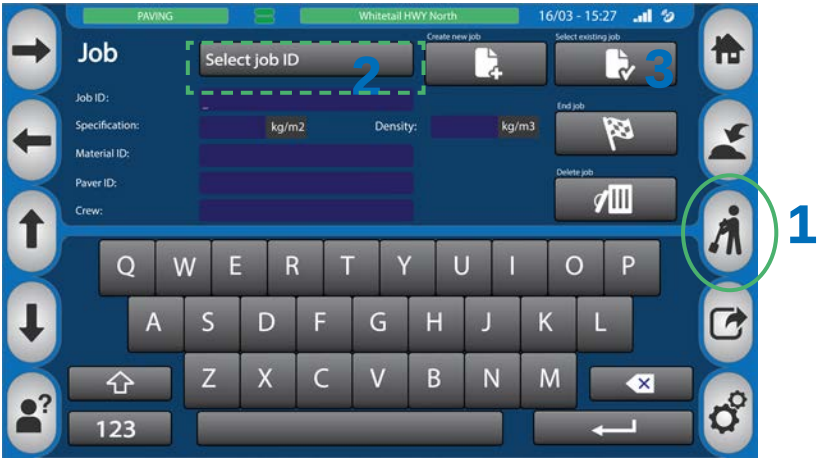


After creating a new job you will be taken to the Home screen and the job starts. The new job is added to the list of jobs.

It is not possible to delete the current job. End the current job **4** to be able to delete it **5**

Select a previously created job

1. Press the “Job” button to access the Job menu
2. Activate the drop down menu by pressing “Select Job ID” and the list of jobs unfolds.
3. Select job in the list and press “Select existing job”

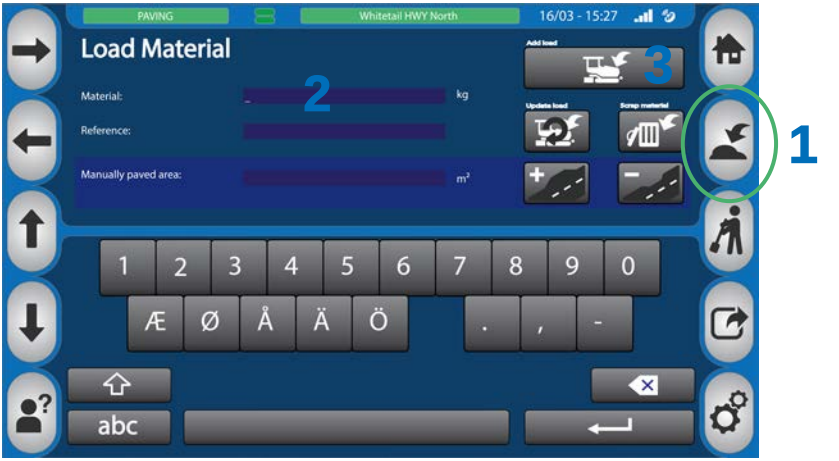


After selecting the job you will be returned to the Home screen and the job starts.

Once you have created a job, it is not possible to change the information entered without creating a new job. Any attempt to change data for an already created job will not be saved. You will have to delete the job and create a new job with the correct information

Enter load

1. Press the “Load” button to access the Load menu
2. Enter load in kg using the keyboard on the screen. Reference code is optional
3. Press “Add load” to register the load



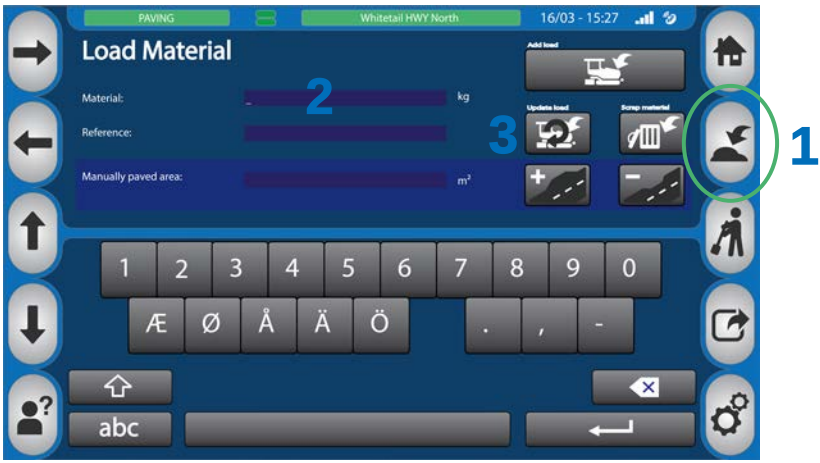
After registering a load, the load list will be displayed for 5 sec (this can be changed in the settings menu, see page 46) and then you will return to the job.

The load is now updated in the load list on the Load and Effectiveness screen (see page 22).

Adding a new load will add a green line to the temperature graph on the Work flow History screen, see page 21

Modify load

1. Press the “Load” button to access the Load menu. Only the current load can be modified
2. Enter load in kg using the keyboard on the screen. Reference code is optional
3. Press “Update load” to modify the load



After modifying a load, the load list will be displayed for 5 sec (this can be changed in the settings menu, see page 47) and then you will return to the job.

The load is now updated in the load list on the Load and Effectiveness screen (see page 22).

Scrap material

1. Press the “Load” button to access the Load menu
2. Enter the amount of material you want to scrap in kg
3. Press “Scrap material” to register, that the material is scrapped

After scrapping material, a list of scrapped material will be displayed briefly in the bottom view.

The list displayed briefly in the bottom view can also be accessed by using the arrow buttons right and left, when in the “Load” menu

Add manually paved area

1. Press the “Load” button to access the Load menu
2. Enter the area of the manually paved area you want to add
3. Press “  ” to register the area

After adding the manually paved area, a list of manually paved areas will be displayed briefly on the bottom screen. The list can also be accessed by using the arrow buttons right and left, when in the “Load” menu.

The “  “ button is only used, if there has been entered a manually paved area and it needs to be adjusted. E.g if an amount too large has been entered into the system

Pause paving

1. Press the green status field while MatManger™ is active. This will temporarily pause the system
2. To activate the system again, press “OK”

Pausing the paving can be relevant when paving past a junction, where manual paving is required. Manually laid areas must then be added to the MatManager™ while paving with the current load, see p. 30 “Add manually paved area”.

How to export data in MatManager™

1.
2.
3.

1 Press the “Export” button to access the Export menu

2 Press “Select job ID” to activate the dropdown menu. Select the job you wish to export in the drop down menu.

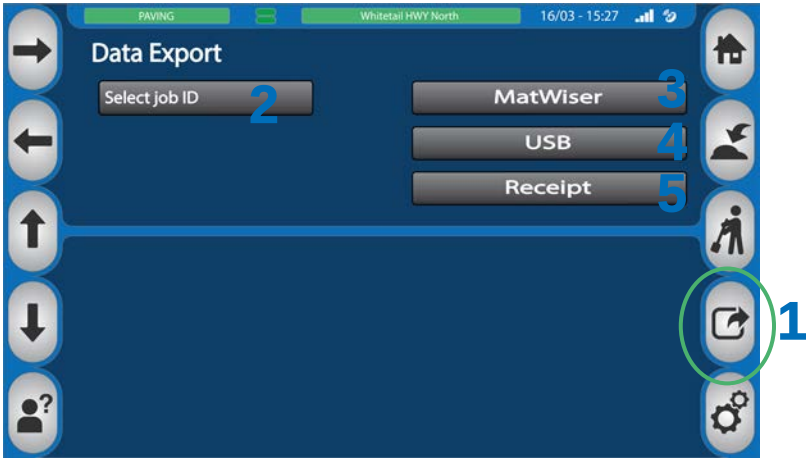
3 Press “MatWiser” to automatically export an encrypted safe data report directly to MatWiser™, for analysis and documentation.

OR Insert the MatManager™ USB stick that came with the system:

4 Press “USB” to export an encrypted safe data report that is stored on the USB stick and can be manually uploaded to MatWiser™ for analysis and reporting

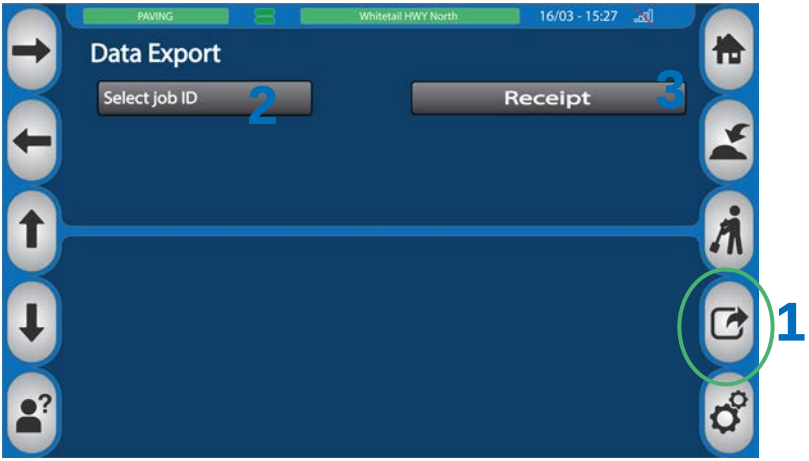
OR

5 Press “Receit” to export a simple, predefined report file to the USB stick, that can be opened and printed from a pc.



How to export data in MatManager™ Light

1. Press the “Export” button to access the Export menu and insert the MatManager™ USB stick that came with the system
2. Select the job you wish to export in the dropdown menu. Press and hold with your finger and the list of job opens. Slide your finger down to the job you wish to select, and release
3. Press “Receipt” to export a predefined report file, that can be opened and printed from a pc



MatWiser™ is not available for MatManager™ Light System. If you wish to access this information, an upgrade is available. Please contact your local sales office

MatWiser™

MatWiser™ is a web-based graphical reporting system, offering full access and visual overview of all jobs and machines, enabling the operator to create custom reports ready to print, for the perfect overview of all the paving jobs done.

Data analysis

Data collected in MatManager™ is analysed using MatWiser™.

MatWiser™ gives you:

- Job summary for review
- Graphical representation of key paving parameters
- Job data correlated to Google maps
- Ability to share job data with colleagues and customers
- A printed job report

The data analyses will enable you to optimize future jobs, foresee possible problem areas of the paved areas, ensure you got the kg/m^2 you planned and/or paid for etc.

How to access MatWiser™

MatWiser™ is accessed using an internet browser on a PC.
Go to: www.matwiser.com and log in using email address and password.

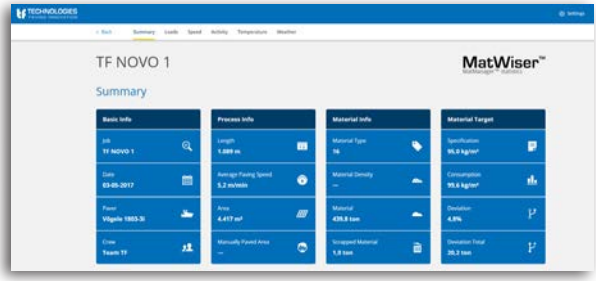
Subscription to MatWiser™

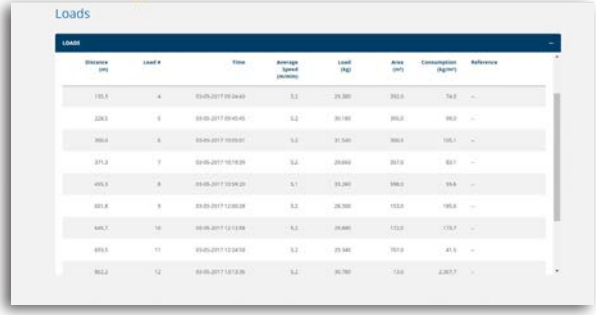
To access MatWiser™, you need a subscription. Once you have a subscription to your MatManager™ system, an unlimited number of users can be assigned to MatWiser™ to access data from that MatManager™ unit.

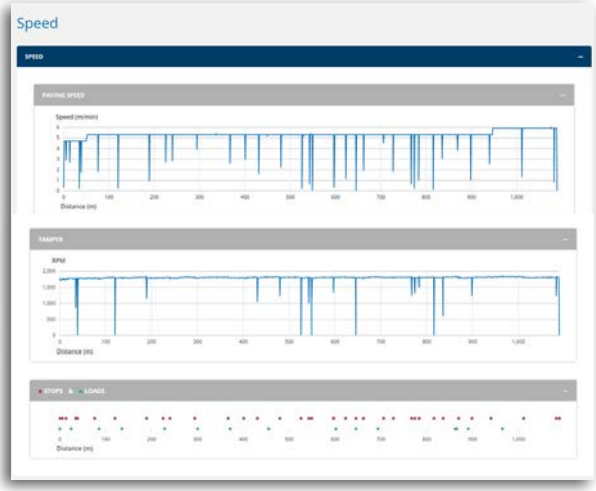
To get a subsciption to MatWiser™, contact TF-Technologies.
Your subscription will be active right away.

MatWiser™ is not available for the MatManager™ Light System. If you wish to access this information, an upgrade is available. Please contact your local sales office

Examples of the graphical reporting accessed in MatWiser™:







For more information about MatWiser™ please contact your local sales office

Settings

The settings menu enables you to configure the system to your needs. This is where you can define your screed settings and preferred system settings.

Press the settings button on the right, to get to the Settings menu. The settings menu consists of 14 screens (12 screens in MatManager™ Light). There is an open and a closed part of the settings menu. The closed part of the settings menu should only be accessed by a skilled service technician.

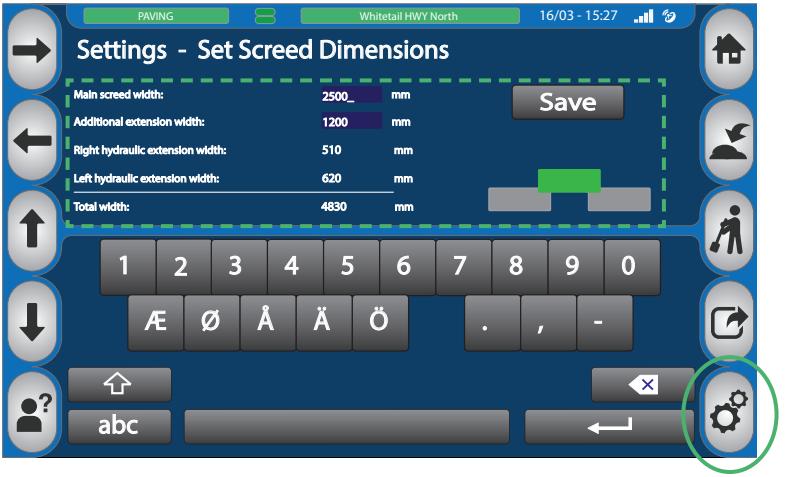
To enter the closed part of the settings menu, go to the last of the open screens and enter the code.

To be able to enter the settings screen, you have to end an active job

The closed part of the Settings menu should only be accessed by trained personnel

Set screed dimensions

Press the Settings button to access the settings screen for entering screed dimensions, as shown below.



Here it is possible to enter the dimensions of the main section of the screed and any additional screed bolt on extensions. It is also possible to view the actual width added by the two hydraulic extensions.

Type in the measurement in mm or feet for main screed width, and any additional screed extensions using the keyboard on the screen. The sum “Total width” is automatically updated to reflect the values entered.

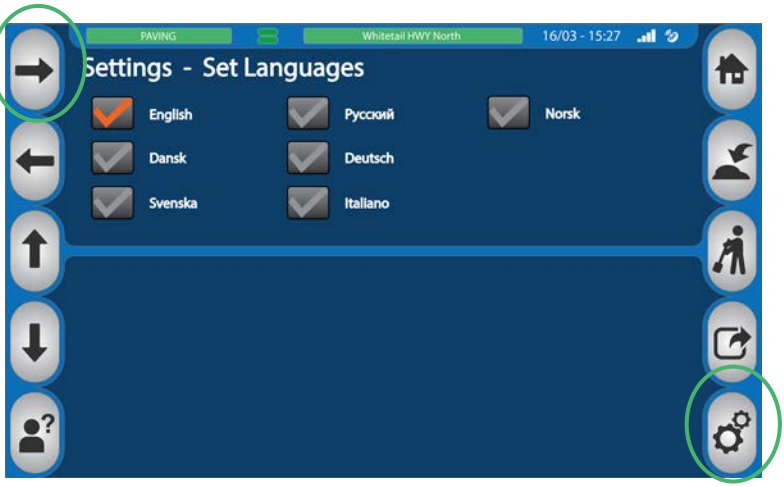
Finish by pressing the “Save” button. Once saved, the Save button will turn green. Now you can return to the Home screen by pressing the “Home” button, or start a job by pressing the “Job” button (see page 25).

Current total width of the screed is displayed on either the Home screen or 1st sub screen depending on software version. Total width displayed should always match up with the width of freshly paved mat

Set language

Press the Settings button, and then press the right arrow once to access the settings screen to set the language. Screen as seen below.

1x

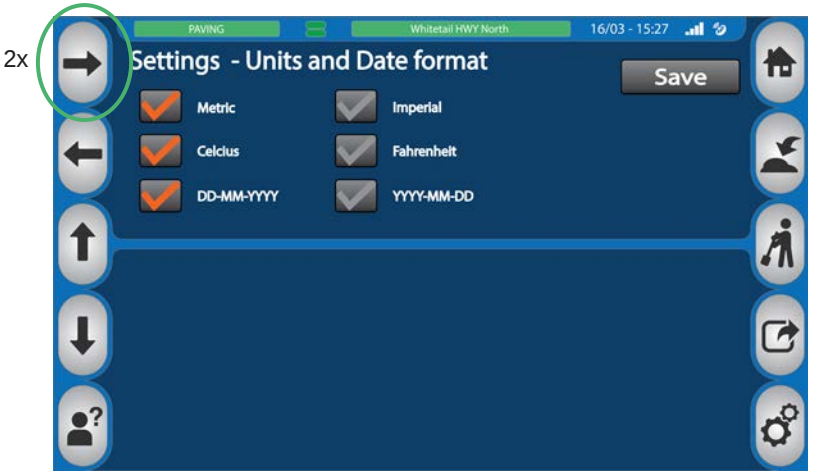


Change language setting by selecting the language you wish, by tapping it with your finger.

After selecting a new language, the system will automatically reboot

Set unit and date format

Press the Settings button, and then press the right arrow twice to access the menu for setting the units and date format. Screen as seen below.

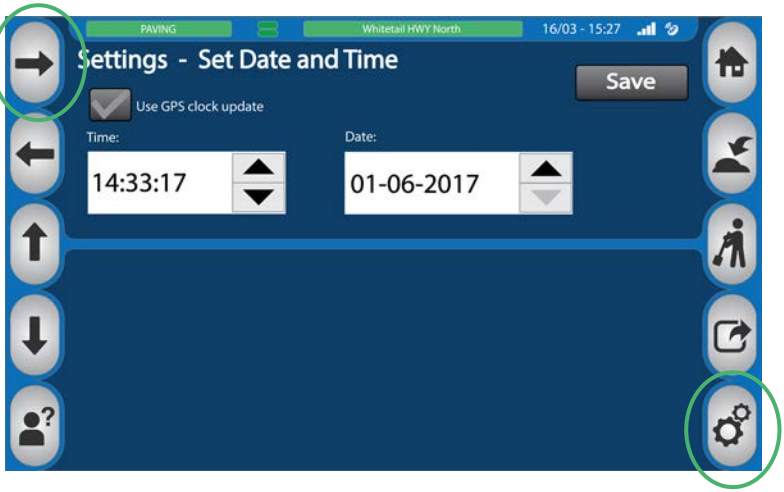


The units and formats chosen in this menu will affect all other menus and values in the system.

Set date and time

Press the Settings button, and then press the right arrow three times to access the menu for setting date and time. Screen as seen below.

3x



Check “Use GPS clock update” to select your current time zone. Time and date will then be updated automatically.

Or using your finger, select the value (Time or Date) you want to change. Then press up or down until you have the correct value. Finish by pressing “Save”.

Date is displayed in the format chosen in the “Unit and Date format” menu
Time is displayed in the format HH:MM

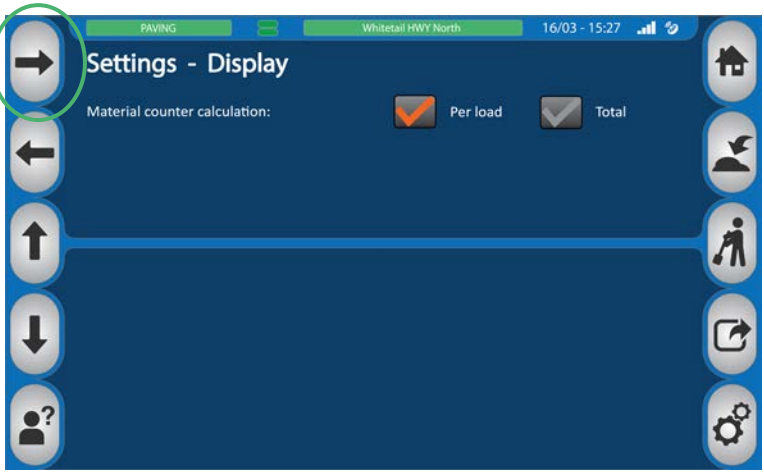
After saving the system may reboot

It is not possible to use the up/down arrows on the side buttons, you must use the arrows within the field you are changing

Set display

Press the Settings button, and then press the right arrow four times to access the menu for setting the displayed value for the material counter shown in the screen in page 19 & 20.

4x



The material counter reflects a calculated value of current material usage, based on loads entered and paved area at the given time.

Material counter “Pr. load”

Material counter will calculate the current material usage based on only the latest load entered, and the actual paved area at the given time.

Material counter “Total”

Material counter will calculate the current material usage based on all loads entered for the current job and the actual paved area at the given time.

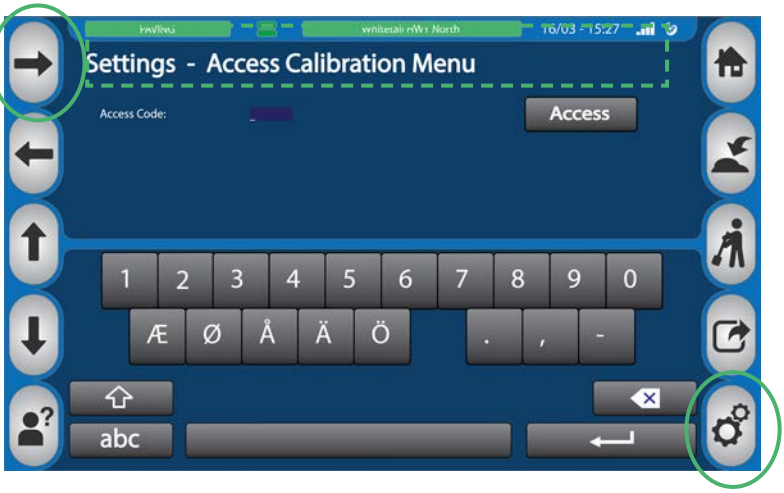
Access calibration menu (closed menu)

When the system is first installed, the service technician will calibrate all sensors, so that the system is ready for use. However, re-calibration of the system may also be necessary at a later stage.

To calibrate the input sensors installed on the machine, access the Calibration menu. This menu should only be accessed by trained personnel, and therefore the menu is protected with a password. The code is 1210.

Press the Settings button, and then press the right arrow five times to access the Calibration menu as shown below.

5x



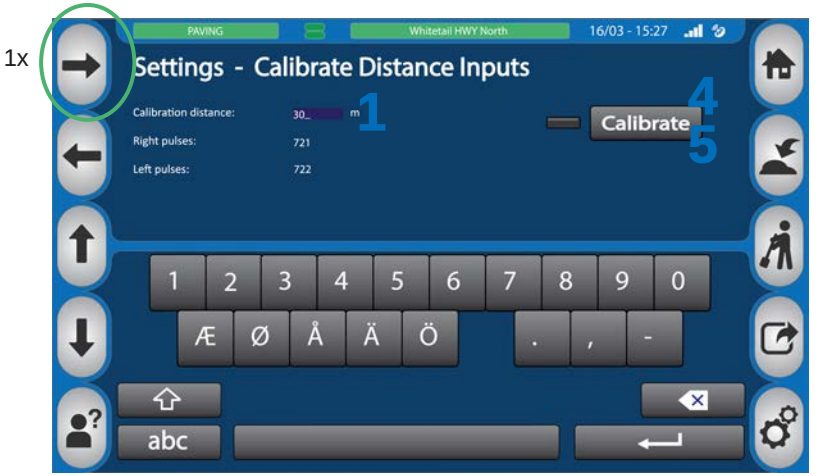
Enter the code using the keyboard on the screen and press “Access”.
To exit the Calibration menu press the “Home” button at any time.

The closed part of the Settings menu should not be accessed for everyday use

Calibrate distance inputs

When the MatManager™ system is installed, the distance input is calibrated. We also recommended to re-calibrate, as the distance wheel is worn down.

To do so, access the Calibration menu as described in the previous page, and press the right arrow once to enter the menu for calibrating distance input.



1.
2.
3.

1 Input the distance that is used for calibration. We recommend to use a distance of minimum 20m, longer is better

2 Stop the paver, and make a start mark on the ground

3 Precisely measure the calibration distance from the paver and make a stop mark

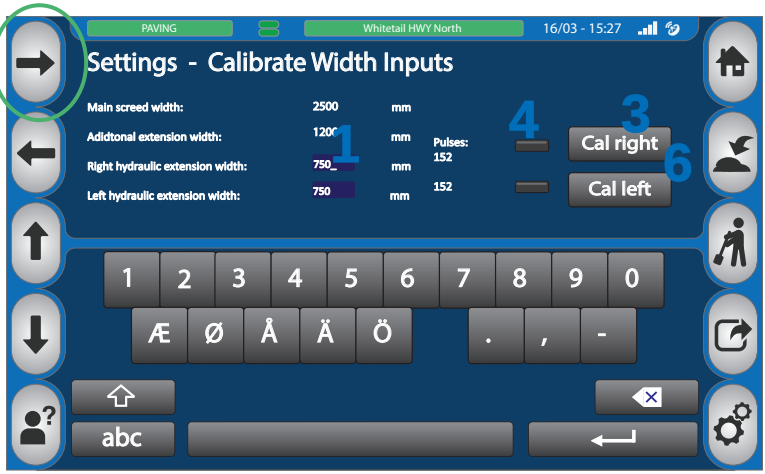
4 Click on “Calibrate“ to start the calibration, and drive the paver to the stop mark

5 Click on “Calibrate” to finish the calibration

Calibrate width inputs

Access the Calibration menu as described in page 42, and press the right arrow twice to enter the menu for calibrating width input. Calibration of width inputs should be performed for both sides.

2x



1.
2.
3.

1 Input the max travel width for the hydraulic extension you want to calibrate

2 Move the hydraulic extension you want to calibrate fully in

3 Click on “Cal left” or “Cal right” to start, depending on which side the extension is to be calibrated

4 A green indicator will light up to indicate calibration

5 Now fully extend the hydraulic extension. You can see the number of pulses received

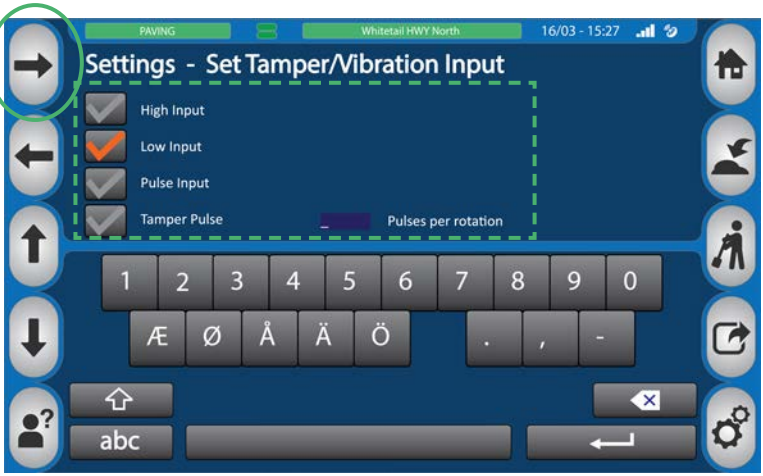
6 Click on the same “Cal left” or “Cal right” button to finish the calibration

Set tamper/vibration input

Access the Calibration menu as described in page 42, and press the right arrow three times to enter the menu for setting the tamper/vibration input.

Set which type of signal is used for the system to recognize that paving has started.

3x



1. Check what kind of signal is used on the paver. (High input, low input, pulse input or tamper input)
2. Select the correct type of signal on the screen, by tapping it with your finger

Select Tamper pulse if you are using the tamper sensor included in the Mat-Manager™ kit, and enter the number of pulses the sensor gives per rotation

Calibrating or offsetting the temperature reading

Access the Calibration menu as described in page 42, and press the right arrow four times to enter the menu for calibrating temperature input.

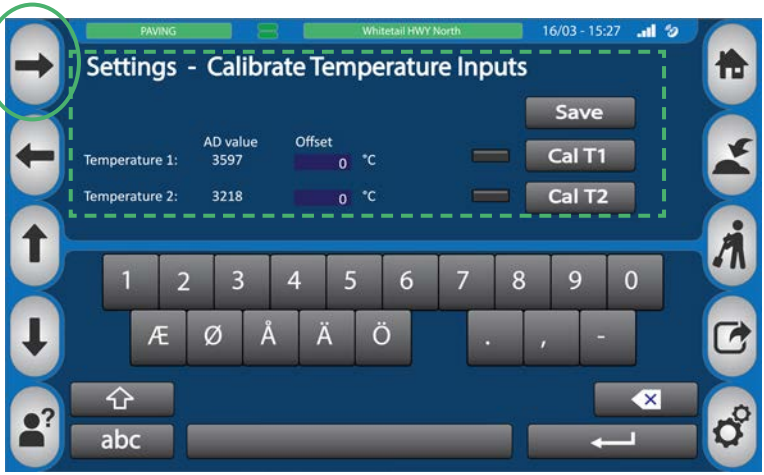
Offset of temperature reading

It is possible to calibrate and offset the temperature with up to +/-9°C / +/-18°F. If you know for a fact that the system is off by e.g. 2°C/F, it is possible to offset the temperature measure. Just use your finger to select the field you want to change and input the offset e.g. 2°C/F and press "Save" to store. Now the temperature measured by the IR temperature Sensor is automatically adjusted with +2°C/F.

Calibration of temperature reading

Calibrating the IR temperature sensors should only be done by trained service personnel, as special equipment is required. Connect a special input representing 0°C / 32°F on the input and click on the corresponding "Cal T" button. Next a small indicator will light up and you can now connect a special input representing 100°C/212°F. To save click on the corresponding "cal T" button again.

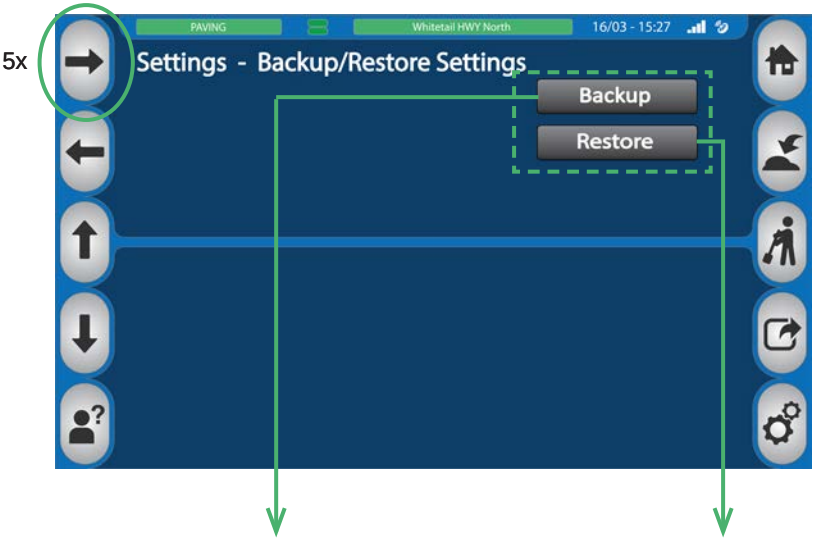
4x



Not available in the MatManager™ Light system. To access IR temperature information, an upgrade is available. Contact your local sales office

Backup / Restore settings

To backup and restore system settings, press right arrow five times in the Calibration menu (see page 42) to get to the Backup/restore menu shown below.



Backup
Saves system settings to a file on the USB stick.

Insert the MatManager™ USB stick into the MatManager™ and press Backup.

Restore
Restores system settings from a file on the USB stick.

Insert the MatManager™ USB stick containing the information you want to apply and press Restore.

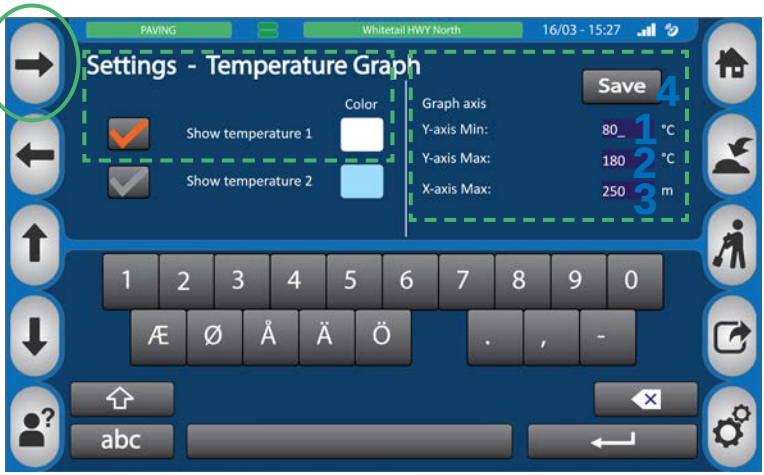
Calibration data will not be saved

Temperature graph settings

To change the settings for the temperature graph, shown on the Work flow History graph screen (illustrated on page 21), press right arrow six times in the Calibration menu (see page 42), to get to the screen below.

To the left, select the temperatures you want displayed on the temperature graph. Both temperature inputs 1 and 2 takes input from an IR sensor. Normally the sensor is connected to temperature 1 input. As standard only one sensor is included in the setup. If a two sensor setup is wanted an additional sensor can be connected to the system (must be bought separately).

6x



To the right, input how you wish the temperature graph to be displayed.

1.
2.
3.

1 Input minimum temperature to be displayed (y-axis): [20-200°C / 70-310°F]

2 Input maximum temperature to be displayed (y-axis): [40-220°C / 110-430°F]

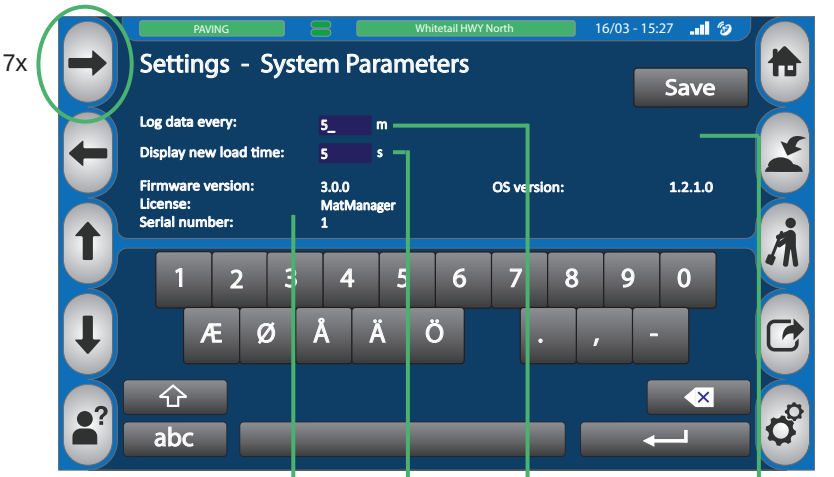
The difference between min and max temperatures must be 20°C / 40°F or more

3 Input the distance you want to look back at (x-axis): [50-500m / 50-500y]

4 Click “Save” to store the values

System Parameters settings

To edit the settings for the system parameters, press the right arrow seven times when in the Calibration menu, to get to the screen below.



Firmware version
Current installed Firmware version.

Licence
Licence installed, MatManager™ or MatManager™ Light.

Serial number
The MatManager™ Control Units serial number.

Log data every
Input the desired distance between logging points stored in the job log file.

Display new load time
Input the time you want to see the load list when you have added a new load [0-10 sec].

Save
Press the save button after inputting new values.

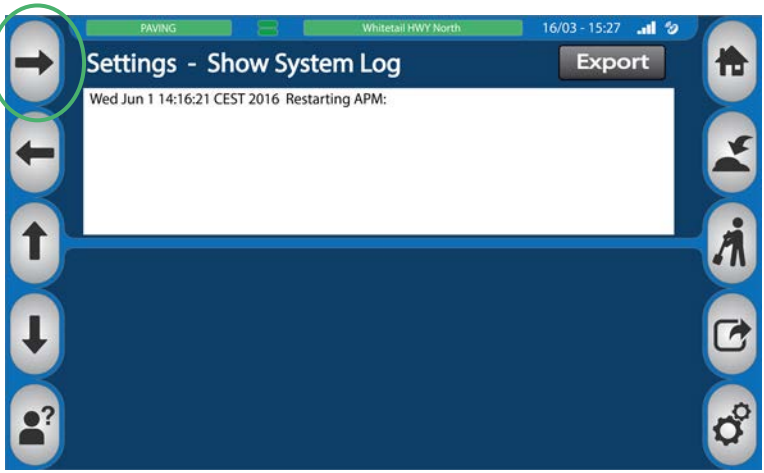
Firmware version for the Interface Box is not shown

Show system log

To access the system log, press right arrow eight times in the Calibration menu (see page 42), to get to the screen below.

The system log is an overview of system events for the MatManager™ and is for service of the system only.

8x



Mobile Data Transfer settings

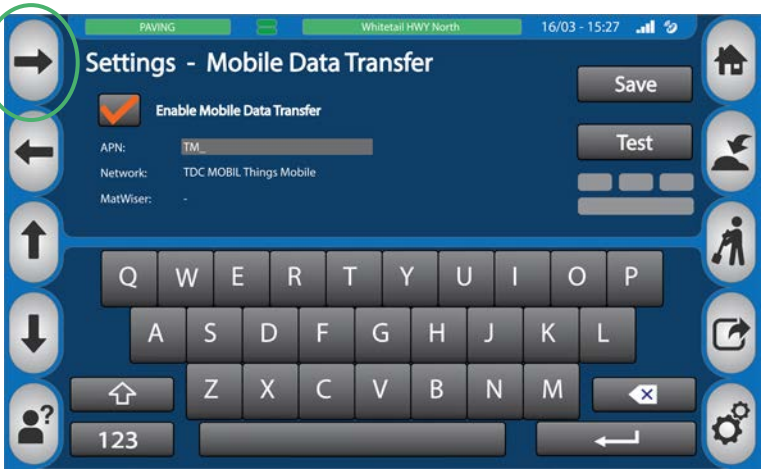
To edit the settings for the Mobile Data Transfer, press the right arrow nine times when in the Calibration menu, to get to the screen below.

To enable easy, mobile transfer of data to MatWiser™ via the Mobile Data Transfer module, “Mobile Data Transfer” must be enabled. Simply check the box as shown below to enable.

Click the “Save” button. The system will reboot, press “OK”.

After the system has rebooted, press “Test” to make sure the system is connected correctly. When all 4 grey squares are green, the Mobile Data Transfer kit is working and connected correctly.

9x



If any of the squares come up red. Please make sure you have service (check the icons in top right corner). If problem persists, please contact your local sales office or TF-Technologies service department +45 8883 2160

Not available in the MatManager™ Light system. To enable wireless data transfer for MatWiser, an upgrade is available. Contact your local sales office

Asphalt Paver Requirements

A pre-condition for the safe use of the MatManager™ Paving Quality System is that the system is only used on asphalt pavers that comply with applicable safety regulation.

The key safety requirements of asphalt pavers, which have an influence on the safe use of the MatManager™ Paving Quality System is therefore outlined below.

Key safety requirements of asphalt pavers for the safe use of the MatManager™ System

Within the EU the asphalt paver must be CE marked and thereby comply with the requirements described in EN60204, Safety on Machinery - Electrical Equipment of Machines

The asphalt paver must be equipped with an emergency stop that can stop all potentially dangerous parts of the machine, including switching off the power supply to the MatManager™ Paving Quality System

MatManager™ Paving Quality System is developed for use on both asphalt pavers with a 12V system and asphalt pavers with a 24V system. The asphalt paver must be able to deliver a stable power supply as described in EN60204, for instance via the battery of the asphalt paver

Key safety requirements for safe installation of the MatManager™ System

A form of overcurrent protection must be installed between the power supply of the asphalt paver and the MatManager™ Paving Quality System. This should be checked prior to the connection of the system. The over-current protection is usually built into the asphalt paver in the form of a fuse in a central fuse box

After installing the MatManager™ Paving Quality System on a new asphalt paver, it should be tested that the emergency stop covers the system, so that power supply to the MatManager™ Paving Quality System is switched off when the emergency stop is activated

Correct use

The MatManager™ has been developed as a Paving Quality System for asphalt pavers, and correct use therefore entails that the system is used for this purpose.

The operator must:

Read and understand the user manual.
In case of questions, contact your local representative

Be aware of the situations described under Examples of Incorrect Use p. 55, Warnings and Dangerous Situations p. 56 and be able to avoid them

Responsibility of the Operator

When planning the paving job, the operator must remember the following:

Investigate local legislation regarding road construction work and the use of protective equipment required for the paving job

Place the MatManager™ Control Unit outside dangerous areas, so it is safe to operate it

Make sure the total risk assessment of the machine is accessible to everyone working with and around the asphalt paver

When commencing the paving job, the operator must remember the following:

Avoid the situations described under Examples of Incorrect Use, p. 55

Avoid situations described in the total risk assessment

Ensure that the MatManager™ Paving Quality System is not damaged

Ensure that the MatManager™ Paving Quality System is connected correctly to the asphalt paver

Inform TF-Technologies or your local representative, if the MatManager™ or any of the parts for any reason are not safe to use

Examples of Incorrect Use

The MatManager™ system should only be used to what it is constructed to, and most examples of incorrect use are self-explanatory and therefore not described. However, certain key examples of misuse or inappropriate behaviour are outlined below, and should be avoided.

Examples of incorrect use of the system before the paving job:

Do not remove any of the labels on the MatManager™ System, as they are required for product identification, e.g. in relation to repair and disposal

Do not open the casing of the MatManager™, as this will expose the electronics and can damage the product

No parts of the MatManager™ Paving Quality System must be rebuilt or refurbished, as TF-Technologies will no longer be able to vouch for the quality, and rebuilding units may cause serious personal injury or material damage

Examples of incorrect use of the system during the paving job:

It is not recommended to connect MatManager™ on a paver, when power is already applied, as the metal jacket on the cable under unfortunate circumstances may lead to short circuiting the asphalt paver, if the metal jacket hits the two power supply pins at the same time

It is not recommended to install the MatManager™ on an asphalt paver on the move or in operation, as this may remove focus from the surrounding traffic, which may result in serious personal injuries

Warnings and Dangerous Situations

The MatManager™ Paving Quality System must not be used:

If the MatManager™ Paving Quality System is obviously damaged

If the MatManager™ Paving Quality System has been rebuilt

The MatManager™ Paving Quality System can be damaged:

If welding is performed on the asphalt paver, the Averaging Beam or Support Arm, as large currents may travel through the construction and damage the electrical equipment.

The following precautions should be taken before welding:

- Remove all electrical equipment wherever possible
- Disconnect the negative pole on the battery of the asphalt paver, or mount voltage protection on the battery
- Place the negative electrode close to the welding point
- Remove paint before welding

When cleaning the asphalt paver, e.g. if using a high-pressure cleaner, as this may expose the MatManager™ system to too large forces. The MatManager™ Control Box and mounting must therefore be removed before cleaning the asphalt paver. The Interface Box should be protected and covered with a plastic bag and the water jet must not be pointed directly at the MatManager™ Interface Box or sensors when cleaning the asphalt paver

The MatManager™ Paving Quality System can lead to serious personal injury

If warnings from the total risk assessment are not complied with

If the MatManager™ Paving Quality System is used in dangerous areas or in dangerous atmospheres/pressure levels, as the system is not designed to such operation

Emergency Procedure

In case of accidents, break-downs or otherwise dangerous situations, the following procedure should be followed:

1. Press emergency stop
2. Turn off the asphalt paver and remove the key
3. Disconnect the cable between the MatManager™ Paving Quality System and the asphalt paver
4. Commence repair

Maintenance

The most important part of the maintenance of the MatManager™ Paving Quality System is to keep all parts clean, dry and dirt free. Remember to follow the cleaning instructions, as incorrect cleaning agents or too large forces can damage the equipment and cause degrading functionality.

It is recommended to inspect all parts after use:

Cables	Mechanical damage	After use	Replace cable
Connectors on MatManager™ Control Box, Interface Box, Sensors and Cables	Wet connectors	After use	Wipe off with dry cloth
	Dirty	After use	Clean with water or benzine
	Mechanical damage	After use	Replace cable/ Replace connector on MatManager™ Control Box, Interface Box and/or sensors
Display and Buttons	Dirty	After use	Clean with water or screen cleaner
	Mechanical damage	After use	Replace MatManager™ Control Box
Generally for MatManager™	Wet before storing	After use	Wipe off with dry cloth
	Insignificant mechanical damage	After use	Continue use
	Significant mechanical damage	After use	Damaged parts should be repaired or replaced
	Dirty	After use	Clean with water or benzine

Service and Repair

In case of problems with the MatManager™ Paving Quality System, please see Trouble-shooting, p. 60, providing answers to the most common problems. If problems persist, contact TF-Technologies or your local representative for assistance.

Do not attempt to repair the equipment yourself. Replacement of connec-tors, display or any other parts must be undertaken by TF-Technologies or an appointed service representative of TF-Technologies. Contact your local representative for further information

Service and repair of the MatManager™, sensors, cables or other parts of the MatManager™ Paving Quality System undertaken by anyone else than TF-Tech-nologies or an appointed service representative of TF-Technologies can result in damaged equipment

Transport

Advice on transport of the MatManager™ system:

The MatManager™ system should be transported in a suitable carry case, where all parts rest firmly without being able to clash against each other. The use of MatManager™ Carry Cases with custom-cut foam is recommended

The transport case must protect the equipment from shock and pressure, as the MatManager™ system is often transported together with heavy equip-ment for the paving job

If the MatManager™ system is packed up wet, the Carry Case should not be completely closed. Both Carry Case and content should be wiped dry before the Carry Case is completely closed and put in storage

When receiving the MatManager™ system, the following should be inspected:

The MatManager™ system is always delivered and installed by trained service personnel from TF-Technologies or a partner appointed and trained by TF-Technologies. Upon delivery, every sensor is installed and tested. The system is configured and tested to work.
If, against all expectations, there are any damaged parts, we will find out during installation and test and replace on the spot. However, it is always advised to make sure yourself, that display, cables and mountings are intact. And also check the Control Box for label and any loose connections.

In the unlikely event parts of the MatManager™ system have been damaged at reception, the following is recommended:

- Inform seller right away
- Document any potential damage in the form of text and pictures
- Do not use damaged products

Storage

Advice on storage of the MatManager™ system:

For long-term storage, the MatManager™ system should be kept dry and out of direct sunlight

Notice that high temperatures can be obtained by storing the MatManager™ system in a non-ventilated car in the summer

Cleaning

It is important that the MatManager™ system is cleaned often, so that it does not lose functionality. However, inappropriate cleaning agents or an incorrect cleaning method can damage the equipment and cause degrading functionality.

It is generally recommended to use a dry cloth with a little water or benzine, as the equipment is secured against water, and because benzine evaporates quickly. A quick evaporation ensures that the benzine does not collect in nooks and crannies and has long-term dissolving effects, as can be the case with other cleaning agents.

Only use water or screen cleaner, not benzine, for cleaning the display on the MatManager™ screen

Please note that benzine is an organic dissolvent, which is flammable and harmful to health and environment. It must therefore be used responsibly and with respect for its harmful effects. The operator should follow these instructions before use:

- Follow the instructions on the bottle of benzine
- Always use as little as possible
- Avoid breathing vapours and direct contact with the skin

When cleaning with fluids, only small amounts should be dapped on the areas to be cleaned, and these areas should be wiped with a dry cloth afterwards. The equipment must never be submerged in chemical liquids or exposed to cleaning agents in larger quantities, as the fluids can gather in nooks and crannies and have long-term dissolving effects.

Be particularly aware of:

No parts of the MatManager™ system should be submerged in fluids as it may gather in nooks and crannies

Never use cellulose thinner or acetone, as these dissolve paint and plastic respectively, which will degrade the functionality of the equipment. Other cleaning agents can also be harmful, but experience shows that these two in particular should be avoided

Never use a high-pressure cleaner to remove dirt, as it will expose the equipment to too large forces

When mechanically rinsing the equipment, no scraping must be undertaken on the display or connectors as these parts are particularly sensitive

Use of benzine to clean cables can make the writing on the cables disappear, but the cables will not be damaged

Disposal

When disposing the MatManager™ system the equipment must be treated as electronic waste in compliance with the local regulations of the country in which the equipment is disposed.

The responsibility for safe and appropriate disposal is transferred to the buyer in the sale of the MatManager™ system.

Troubleshooting

Connection of MatManager™ Control Box

Symptom	Probable Cause	Appropriate Action
No display	No power to MatManager display	• Verify paver power supply • Verify cable connections • Inspect cables for damages

Erroneous Behaviour

Symptom	Probable Cause	Appropriate Action
Status field displays "Comm Err"	No connection to Interface Box	• Check cable is connected correctly • Check Interface Box for damage, replace if necessary
"Error" message shown in display/No data input from Weather Station or IR Temperature sensor.	Sensor is dirty, defect or not connected properly	• Clean sensor • Check paver power supply • Check cables and connections
Value for "Width" is frozen and doesn't change when screed width is adjusted	Width sensor is dirty, defect or not connected properly	• Clean sensor • Check paver power supply • Check cables and connections
Value for distance is frozen and doesn't change when paving (and therefore MatManager never switch into "paving mode")	Distance sensor is defect or not connected/installed properly	• Check position of sensor • Make sure light on sensor and connector is pulsing when moving • Check cables and connections • Check paver power supply
Indicator for tamper is red, even when paving (and therefore MatManager never switch into "paving mode")	Tamper/Vibrator sensor is dirty, defect or not connected/installed properly	• Check position of sensor • Make sure light on connector is pulsing when tamper/vibrator is on • Check cables and connections • Check paver power supply
No data input from Weather Station with GPS	Weather Station not connected properly or cable from Interface Box to Screen is too long	• Check cables and connections • Select a cable with maximum length of 6 m, relocating MatManager™ mounting and screen if necessary
Indicator for GPS does not turn green, but weather data is present. (No GPS positions are logged)	Satellites are not found	• Check position of Weather Station. Weather Station must have free line of sight to the sky to connect to satellites

List of Parts in the MatManager™ System

The MatManager™ Paving Quality System for use on asphalt pavers.

The main parts in the system are

- MatManager™ Control Unit
- MatManager™ Interface Box

S-51712 MatManager™ Control Unit
S-51714 MatManager™ Light Control Unit

S-50721 MatManager™ Interface Box

Sensors and Accessories for MatManager™

Part no.	Product	
S-50721		MatManager™ Interface Box
S-10121		Interface Box Power Cable
S-51712		MatManager™
S-51714		MatManager™ Light
S-10109		Weather Station with GPS for MatManager™
S-10116		Mount for Weather Station/GPS 4 way, for MatManager™
S-10110		Cable for Weather Station/GPS for MatManager™
S-10082		Distance Sensor
S-10083/10,0		Cable for Distance Sensor
S-10085		Distance Wheel Assembly
SP-10087		Distance Wheel Replacement

Part no.	Product	
S-10112		Tamper/Vibrator Sensor
SP-10119		Mounting Bracket for Tamper Sensor, for Dynapac Paver
SP-10072		Mounting Bracket for Tamper Sensor, for Vögele Screed AB 500 + AB 600
SP-40006		Wire Sensor Mount Kit for Vögele Screed AB 500 + AB 600
S-10096		Wirepull Screed Width Sensor
S-10083L/5.0		Cable for Width Sensor
S-10098		IR Temperature Sensor
SP-10115		Magnetic Mount for IR Temperature Sensor
S-10106		Mount Arm for easy mounting of MatManager™ Control Unit on the paver. Enables you to adjust position of the MatManager™ Control Unit to ensure perfect view of the data on the screen from all angles.
S-10114		Mount Ball for mounting on poll or tube
S-10107		Mount Ball for MatManager™ Control Unit, and for mounting on flat surfaces.

Part no.	Product	
S-10100		MatManager™ Carry Case For storage and transportation of the Mat-Manager™. Room for MatManager™ Control Unit, Mounting, USB stick and Cable.
S-50280/2.2		Coiled I-cable
S-10105		M12 Male connector, 4 pin
S-10115		M12 Male connector, 4 pin
SP-51632		M12 Blind Cap
SP-51635		M12 Cap, 4 pin
SP-51633		Bayonet Cap, 6 pin
S-10104		MatManager™ USB stick
SP-51631		Cap for USB

Part no.	Product	
S-10122		Mobile Data Transfer Module
SP-10125		Bolt Kit
SP-10123		Antenna
SP-10124		Antenna Mounting Bracket
SP-10126		MatManager™ MDT Cable
SP-10127		Interface Box MDT Cable
SP-10128		M12 Male Connector, 5 pin
SP-10131		Socket for USB

Interfacebox connections

MatManager™ Interface Box connections table

Connector, p/n	Sensor	Socket Type		Function	Pin no.	Connection
S-10115	Rigth width	M12 Female		V+	1	Brown
				RW0	2	Black
				GND	3	Blue
				RW1	4	White
				*) Please see info box on next page		
S-10115	Left width	M12 Female		V+	1	Brown
				LW0	2	Black
				GND	3	Blue
				LW1	4	White
				*) Please see info box on next page		
S-10115	Rigth Distance	M12 Female		V+	1	Brown
				RD	2	Black
				GND	3	Blue
S-10115	Left Distance	M12 Female		V+	1	Brown
				LD	2	Black
				GND	3	Blue
S-10115	Tamper/Stand by	M12 Female		V+	1	Brown
				TAMP	2	Black
				GND	3	Blue
S-10105	Temperature 1	M12 Female		V+	1	White
				TEMP1	2	Yellow
				GND	3	Brown/Black
S-10105	Temperature 2	M12 Female		V+	1	White
				TEMP2	2	Yellow
				GND	3	Brown/Black
S-10105	CAN 2 (Weather station)	M12 Female		V+	1	Red
				CAN hi	2	White
				GND	3	Black
				CAN lo	4	Blue
S-10115	Out 3 (Mobile Data Transfer)	M12 Female		V+	1	Brown
				GND	3	Blue
	Power	M12 Male		V+	1	Brown
				GND	3	Blue

Mobile Data Transfer connections

MatManager™ Mobile Data Transfer Module connections table

Connector p/n	Sensor	Socket Type		Pin no.	Connection
	Mobile Data Transfer Module (X1)	M12 Male		1	Brown
				2	No connection
				3	Blue
				4	No connection
				5	No connection
SP-10128	Mobile Data Transfer Module (X2)	M12 Female		1	Red
				2	White
				3	Green
				4	No connection
				5	Black

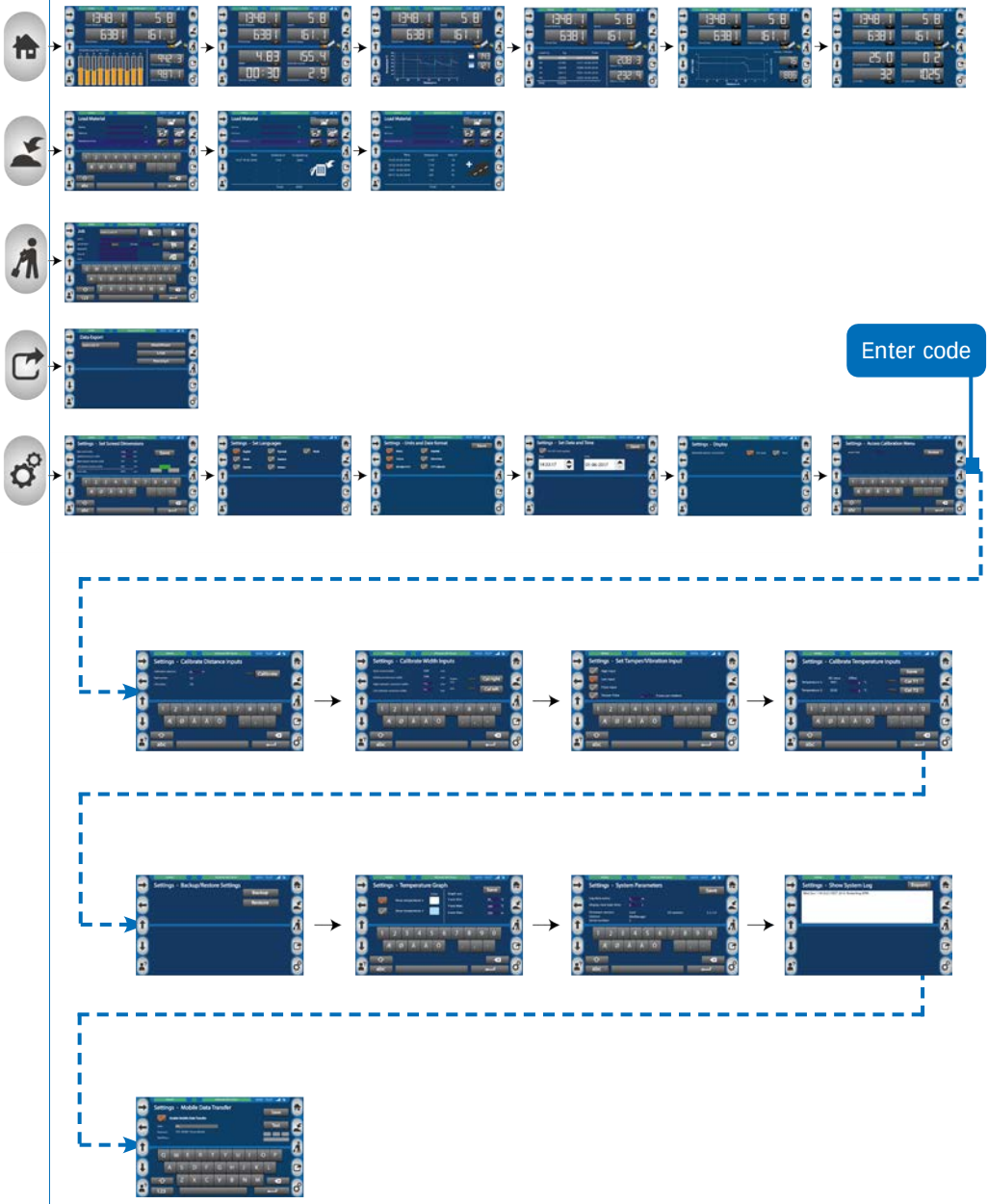
If using the SP-40006 Wire Sensor Mount Kit, when assembling the connector, you need to switch the black and white cables.

1: Brown 2:White 3: Blue 4: Black

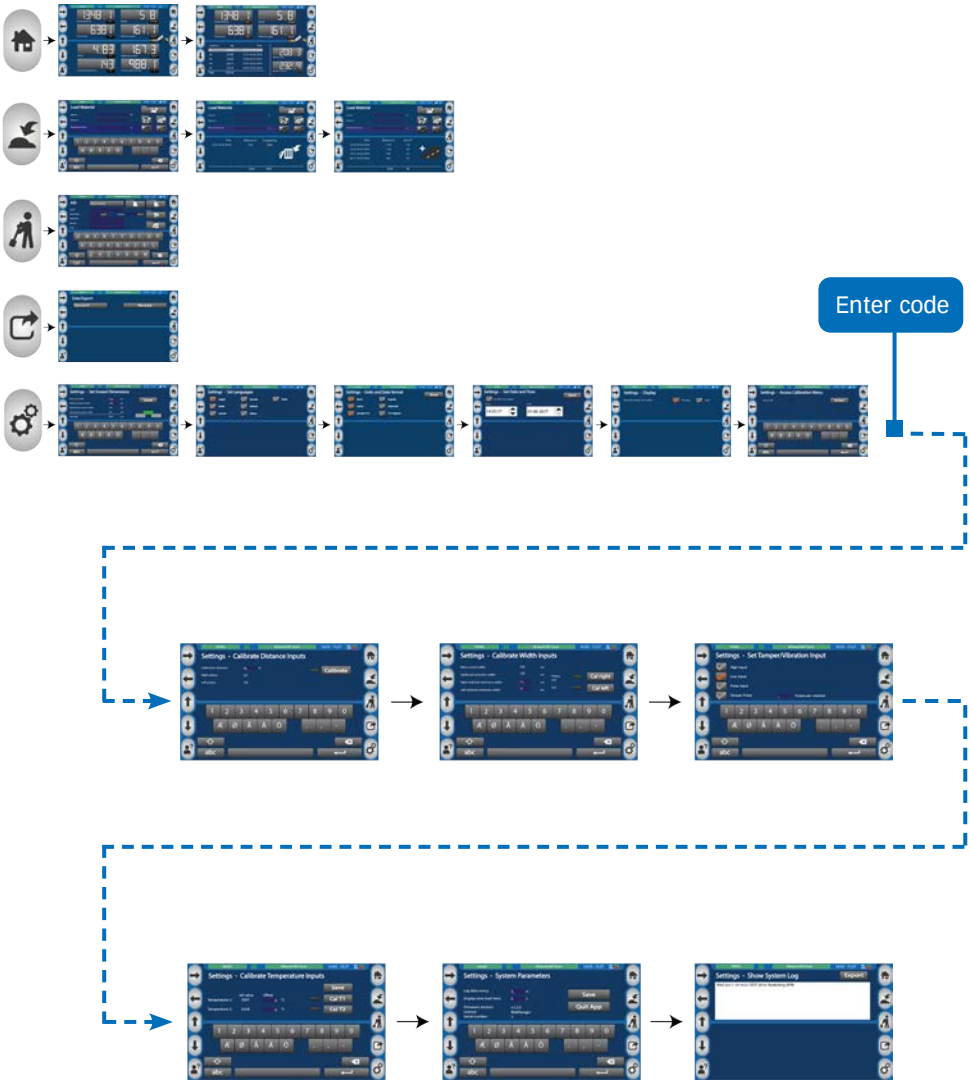
Screen / Menu Overview

Menu overview of the MatManager™ and MatManager™ Light.

MatManager™:



MatManager™ Light:



Declaration of Conformity

TECHNOLOGIES
PAVING INNOVATION

EC Declaration of Conformity
Document no.: J9006903
Published: September 26, 2019

EC Declaration of Conformity

Electromagnetic Conformity Directive 2004/108/EC

Manufacturer within European Community

COMPANY NAME	TF-Technologies A/S
ADDRESS	Kratbjerg 214 3480 Fredensborg Denmark

Description of Product

PRODUCT NAME	MatManager			
MODEL	-			
APPLICATION	Quality parameter logging system for asphalt paving			
PART NUMBER	S-51712 (Control Box MatManager)	S-51714 (Control Box MatManager Light)	S-10096 (Wire sensor)	S-10082 (Distance sensor)
	S-50721 (Interface Box)	S-10109 (Weather Station)	S-10098 (IR sensor)	S10112 (Tamper/Vibration Sensor)

Conformity and Assessment Procedure Followed

DIRECTIVE	Electromagnetic conformity Directive 2004/108/EC
HARMONIZED STANDARD	EN 13309:2010 – Construction machinery - Electromagnetic compatibility of machines with internal power supply
TEST METHOD	ISO 10605 ISO 11452-2 ISO 11452-2 CISPR 25 ISO 7637-2

Valid if both installation and use follow the instructions of TF-Technologies A/S

September 26, 2019

Lisbeth Teilmann Melchior, CEO, TF-Technologies A/S

TECHNOLOGIES
PAVING INNOVATION

EC Declaration of Conformity
Document no.: J9008301
Published: June 18, 2019

EC Declaration of Conformity

Manufacturer within European Community

COMPANY NAME	TF-Technologies A/S
ADDRESS	Kratbjerg 214 3480 Fredensborg Denmark

Description of Product

PRODUCT NAME	GSM module
MODEL	GSM module
APPLICATION	GSM module for MatManager.
PART NUMBER	S-10122

Conformity and Assessment Procedure Followed

DIRECTIVE	Electromagnetic Conformity Directive 2014/30/EU		(EMC)
	Low Voltage Directive 2014/35/EU 2009/142/EC		(LVD)
	Radio Equipment Directive 2014/53/EU		(RED)
STANDARDS	EMC:	EN 13309:2010 – Construction machinery EN 301 489-1, -17 and -24 EN 61000-6-2:2005 and EN 61000-6-4:2007 UN ECE regulation 10	
	LVD:	IEC/EN 60950-1:2006 incl. A1, A2, A11, A12 IEC/EN 60950-22:2006, A11, C1, A11/C1 ANSI/UL 60950-1 CAN/CSA C22.2 No. 60950-1-07	
RADIO CERTIFICATIONS	CE/FCC/ETL/CB. Certified for Europe and North America		

Additional Compliance

DIRECTIVE	
HARMONIZED STANDARD	

Valid if both installation and use follow the instructions of TF-Technologies A/S

June 18, 2019

Lisbeth Teilmann Melchior, CEO, TF-Technologies A/S

TECHNOLOGIES
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