

USER MANUAL

Application software **MADOW**

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1 Legal notice

Warning concept

This manual contains information that you must observe for your personal safety and to prevent damage to property. Warnings are presented in decreasing order of hazard level as follows:



DANGER

Indicates a direct hazard for humans. Irreversible injuries or death will result if not observed.



WARNING

Indicates a recognizable hazard for humans. Irreversible injuries or death may result if not observed.



CAUTION

Indicates a recognizable hazard for humans or possible damage to property. May lead to reversible injuries or damage to property if not observed.

ATTENTION

Information on potential damage to property. May cause damage to property if not observed.

NOTE: Under “Note”, you will find tips, recommendations, and useful information on specific actions and facts.

If several hazard levels occur, the warning for the highest level is always used. If the triangle warning against personal injury is used in a warning, then a warning against property damage can also be added to the same warning notice.

Qualified personnel

The product associated with this documentation may only be handled by personnel qualified for the respective task. Furthermore, the product may only be handled in compliance with the associated documentation and the safety and warning instructions contained therein. Due to their training and experience, qualified personnel are equipped to recognize and avoid potential hazards when handling these products.

Basic knowledge required

Knowledge of personal computers, operating systems, and programming is a prerequisite. General knowledge in the field of automation technology is recommended.

Safety instructions

Before commissioning the product, be sure to read the safety regulations carefully and observe the corresponding information in the manual. Always keep the User Manual within reach.

Intended use

[in.hub](#) products may only be used for the applications specified in the corresponding technical documentation.

If third-party products and components are used, they must be recommended or approved by [in.hub](#).

Proper storage, setting up, assembly, installation, commissioning, operation, and maintenance are essential for the correct and safe operation of the product.

The permissible environmental conditions must be complied with. Information in the associated documentation must be observed.

Trademarks

All names marked with the symbol “®” are registered trademarks. Other names in this document may be trademarks whose use by third parties for their own purposes may infringe on the rights of the owners.

Disclaimer

The content of this publication has been checked for conformity with the hardware described. Nevertheless, discrepancies cannot be ruled out, so we do not assume any liability for its completeness and correctness. The information in this publication is reviewed on a regular basis. Any corrections needed will be included in the subsequent editions.

2 General information

This User Manual contains all the information you need to commission and use the **MADOW** app.

It is intended for all process managers who are responsible for ensuring trouble-free machine running times and production processes.

2.1 Scope of delivery

MADOW application software (app)

1 x User Manual (PDF)

2.2 Network Security

Please keep in mind that the product does not encrypt communication within the internal network. Therefore, protect your network against unauthorized access from outside! The integration into a network with Internet access must be carried out with special care. For this, it is essential to talk with your system administrator in advance.

2.3 Service & Support

If you have any questions about specific use cases or about technical parameters, please contact us.

Mail: service@inhub.de

Phone: +49 371 335 655 00 (Technical Sales Staff)

These details will connect you with the appropriate contact.

3 Product information

MADOW is a application software (app) in SIINEOS that allows you to monitor and supervise machine downtimes or productive times. The signals of the I/O units previously configured in SIINEOS are used in MADOW for downtime monitoring.

3.1 Principle

In MADOW, you can map your production process that you want to monitor - by defining lines and stations and linking them to the signals.

A **line** can be a single machine or an entire process or production line with several processing steps, e.g. "sheet metal roll" or "turning and milling line".

Stations reflect the process steps to be monitored on a line. This can be, for example, the "Milling" station or the "Conveyor" station. You can individually model the scope of a line together with its stations in MADOW.

MADOW only works in combination with a hardware device with SIINEOS installed. For example, if you connect a power sensor to the [in.hub](#) gateway that is to measure whether current is flowing or not (machine is running or not running) at the "Milling" station, you set up the interface to which the sensor "delivers" its signal in SIINEOS. In MADOW, you only define from which interface or sensor data is retrieved for the condition monitoring of a station.

Several sensors can be attached to the station and connected to the gateway. In the I/O management of SIINEOS, the sensor signals can be linked to a signal (see "synthetic signals"). If, for example, the spindle current drops on a milling machine and at the same time the sensor on the door signals "open", then a downtime can be generated in MADOW via the synthetic signal, which is composed of the two individual signals.

NOTE: If the signal values of a station fall outside the defined limits over a defined period of time, a shutdown of the entire production line is triggered, even if the signal values of the downstream stations do not exceed any limits.

In addition to the MADOW application software, there is another app that allows you to monitor multiple machines or an entire machine park and display them in a floor plan - MADOW MASTER.

MADOW MASTER is described in a separate user manual and can be downloaded from the [in.hub](#) download portal: <https://download.inhub.de/madow>.

4 Working with MADOW

The **MADOW** app accesses all configuration entries that you have made in SIINEOS. In the app itself, the signals are processed in such a way that the downtimes of the production lines and stations can be seen easily and quickly.

NOTE: Before using MADOW, make sure that the following steps have been performed:

- All necessary devices, such as gateway, add-on modules, sensors, etc. are installed.
- The network is configured in SIINEOS for communication and data flow to MADOW.

All required information can be found in the user documentation of the devices or the SIINEOS software: <https://download.inhub.de/siineos>.

4.1 User roles

For the operation of MADOW there are two user groups, which are equipped with different user rights.

(Application) Administrator

- Can open MADOW without authentication, but must log in with his/her user data to the protected area **Administration**
- Creates new lines and stations, manages them and can also delete them again
- Defines the reasons for a downtime, with which downtimes of a line are acknowledged, manages them and can also delete them again
- Optional: Establishes communication to the master gateway if a master is present

Machine operator

- Can open MADOW without authentication
- Can display downtimes in a weekly or daily view
- Acknowledges downtimes with the reasons defined by the administrator
- Can look at statistics about the total running time of a line and its downtimes

4.2 Opening MADOW

MADOW must first be activated in SIINEOS before you can access the app. This is done by the system administrator who also sets up SIINEOS.

1. Enter the web address of MADOW, which you received from your system administrator, into your browser.

When you log in for the first time, there is a default production line that you can delete.

If the application administrator has already created lines and stations, then this page is filled with data.

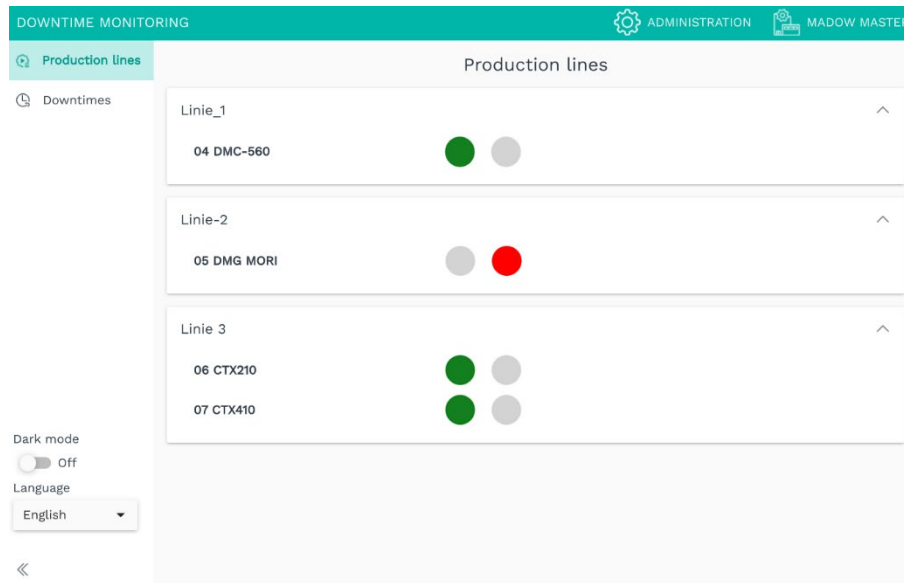


Fig. 1: Start page MADOW with the overview of the current state of the production lines.

If you do not reach MADOW

In case MADOW does not open or the IP address is not reachable, the app may not have been activated in SIINEOS. Please contact your system administrator.

4.3 Viewing production lines and their states

1. Select a line and click on the station whose stoppages you want to take a closer look at.

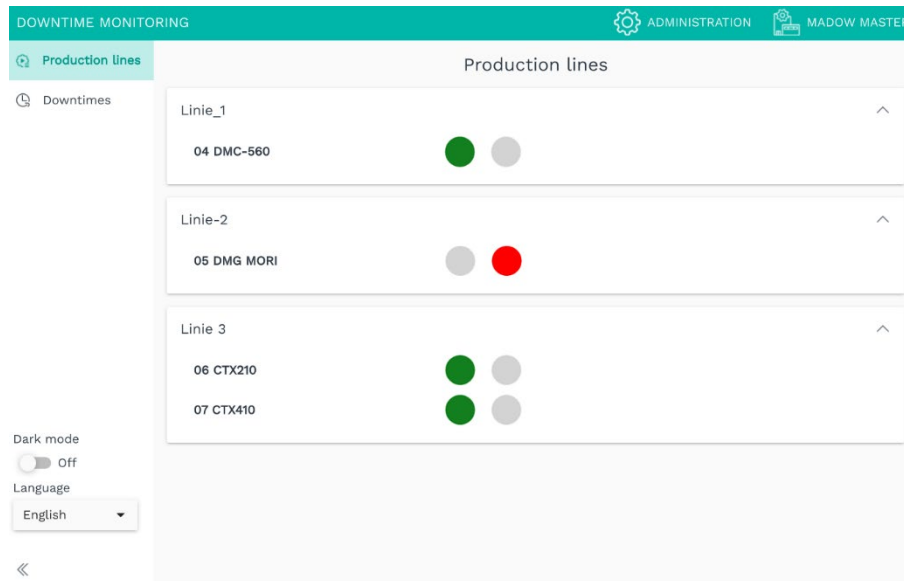


Fig. 2: Overview of the production lines (exemplary representation)

A weekly view opens, in which all 24 hours of the day are displayed with a bar.



Fig. 3: Week view (exemplary representation)

On the right side, the traffic light scheme shows the statistics of the monitored line:

- Green = Station runs without interruption
- Yellow = There is a planned downtime that has already been confirmed
- Red = There is an unplanned confirmed downtime or a downtime that has not yet been confirmed

Next to the traffic light scheme you will find the number of pieces produced per shift. This value is only output if you select the **Pulse** or the **Counter** operation mode when creating a line/station. See [Creating and editing production lines, page 12](#).

2. Move the mouse over a bar to find out the beginning, the end, as well as the reason for the downtime.

- To enter the shift view of the day, click on a day of the week or bar.



Fig. 4: Shift view (exemplary representation)

The three standard shifts (early, middle and night shifts) are shown there.

NOTE: If your station is only running in two-shift or one-shift operation, the non-productive time is also displayed as downtime.

4.4 Displaying and acknowledging current downtimes

Downtimes are always triggered by a station but cause the entire line to stop. Each downtime is initially stored as an unplanned downtime. You only assign a reason to the downtime when you acknowledge it.

On the **Downtimes** page you can view the downtimes of a line as well as the triggering station. Here you can confirm the downtimes.

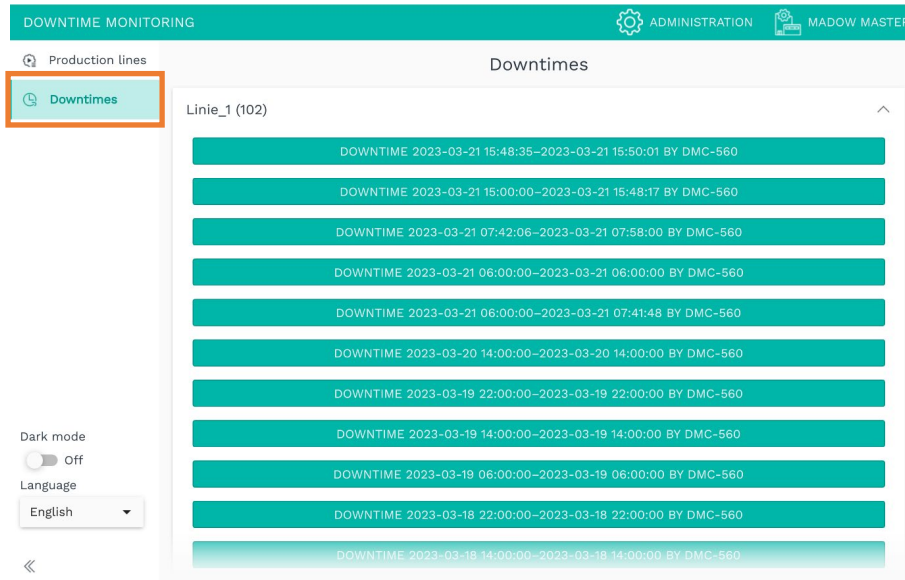


Fig. 5: Overview of all unacknowledged downtimes of a selected production line (exemplary representation)

1. Click on a line.

A list opens with all downtimes that have not yet been acknowledged.

2. Click on a downtime.

A selection of reasons is displayed with which you can acknowledge the downtime.

NOTE: Downtime reasons can only be added and managed by the application administrator.

3. Select the applicable reason for the downtime.

The downtime is now acknowledged and deleted from the list.

-or-

If you have added several stations to this reason, a selection of stations will appear. Select the station that caused the downtime.

4. Continue until all downtimes have been acknowledged. Only then the downtimes will also be listed in the machine monitoring statistics.

Acknowledged but unplanned downtimes are still displayed in red in the production lines overview.

5 Managing MADOW

NOTE: The tasks described in this chapter are accessible only to the **Application Administrator** user role.

5.1 Opening the administration area

1. In the **MADOW** app, click **Administration** in the upper right corner.

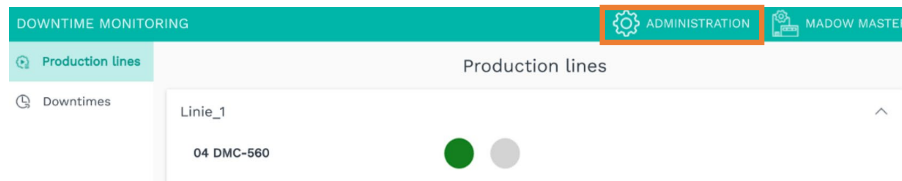


Fig. 6: Access to the Administration area

2. Log in.

The user accounts for the apps are created in SIINEOS. To administer an app, you need the **Application Administrator** role.

The following tasks will be displayed in the **Administration** area:

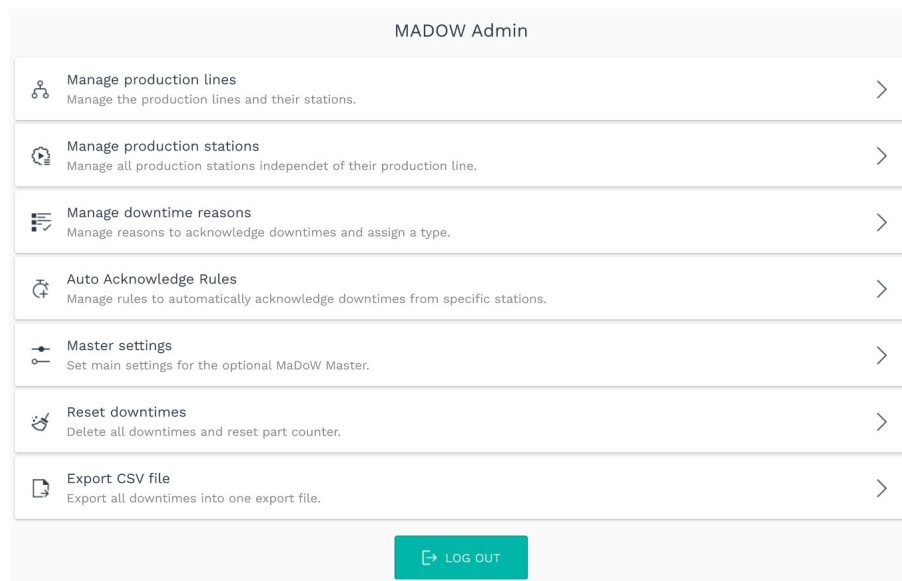


Fig. 7: View of the Administration area

5.2 Creating and editing production lines

1. On the **Administration** page, click **Manage production lines**.

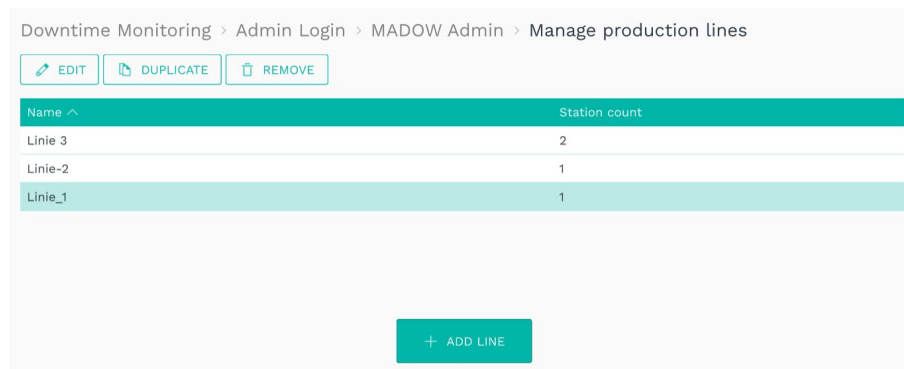


Fig. 8: Administration > Manage production lines

2. To create a new line, click **Add line**.

The setup wizard opens to guide you through the creation. Confirm your entries with **Next**.

3. Assign a **Name**.

4. Click **Add station**.

The setup wizard opens again.

5. Fill in the input fields as follows:

- o **Name:** Enter the name of the station.
- o **Source signal:** Select the I/O unit and the source signal to read from.
- o **Operation mode:** Select how the source signal is to be read.

Binary process state: The mode is mainly used for digital signals.

Performance indicator: In this mode, a value range can be defined within which a process or machine is detected as running. Example: You detect the current signal of a machine with a power sensor.

Counter: Select this mode if a control or a synthetic signal provides a piece count value and this increases by a certain value with each manufactured product.

Pulse: Select this mode if the input signal is representative of a manufactured part. The Takt mode then represents a piece count counter.

- o **Parameter:** Select when the process is characterized as "running" and enter the threshold value if necessary.

The input of the parameters is based on the selected **Operation mode**, so the fields vary. Just follow the instructions in the UI.

- o **Timing:** The entry of the value is based on the selected operation mode, so that the fields vary.

Either enter a cycle time in which the entries made under **Operation mode** and **Parameters** are queried.

Or enter the smallest time span after which a downtime is detected or after which production is safely resumed.

6. Click **Save**.

This will take you to the overview of the stations.

7. If you want to add more stations, repeat the actions from step 4.

-or-

Click **Save** to finish editing the line.

The overview list with all production lines appears again.

8. To edit a line, select a line and click **Edit** or double-click.

You will now return to the setup wizard and can continue as described from step 3 described.

5.3 Managing production stations

1. On the **Administration** page, click **Manage production stations**.

All stations that are created are listed.

Downtime Monitoring > Admin Login > MADOW Admin > Manage production stations

EDIT REMOVE

Line name	Name ^	Unit	Signal	Value
Linie 3	CTX210	Current measurement	Channel 02	0,000000
Linie 3	CTX410	Synthetic signals	Manufacturing	0,000000
Linie_1	DMC-560	Current measurement	Circular knitting machine	5,636649
Linie-2	DMG MORI	HUB-GM100 Werkhalle	Knitting machine	0,000000

Fig. 9: Administration > Manage production stations

2. Double-click a station whose settings you want to adjust.

-or-

Click **Edit**.

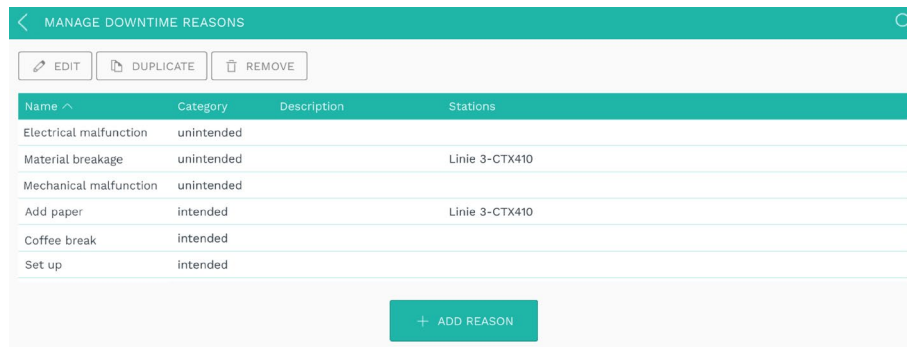
The setup wizard appears.

3. Continue as described in [Creating and editing production lines, page 12](#) from step 5 described.

5.4 Managing downtime reasons

1. On the **Administration** page, click **Manage downtime reasons**.

All reasons that are created are listed.



Name ^	Category	Description	Stations
Electrical malfunction	unintended		
Material breakage	unintended		Linie 3-CTX410
Mechanical malfunction	unintended		
Add paper	intended		Linie 3-CTX410
Coffee break	intended		
Set up	intended		

Fig. 10: Administration > Manage downtime reasons

2. To create a new downtime reason, click **Add reason**.

The setup wizard opens to guide you through the creation. Confirm your entries with **Enter** or **Next**.

3. Enter a **Name** for the downtime reason.
4. In the **Category** drop-down menu, select one of the following entries:
 - **Intended:** The reason for the downtime is planned, e.g. maintenance, and is displayed in yellow in the production lines overview.
 - **Unintended:** The reason for the stoppage is unplanned, e.g. power failure, and is displayed in red in the production lines overview.
 - **Ignored:** The downtime is ignored. It does not appear in the downtimes overview. This can be useful if very short downtimes (e.g. reloading materials) are not to be considered, but the accuracy of longer downtimes is not to be affected.
5. Optional: Provide a **Description** of the reason.
6. Enable the checkbox in the first column to add the just created reason to any **Stations**.
For general reasons that affect the whole line, such as "break", you do not need to select a station.
If you select several stations, you can acknowledge only the downtimes of these stations with the reason.
7. Click **Finish** to confirm the entries.
You will return to the list of downtime reasons. There you can **Edit**, **Duplicate**, or **Remove** individual reasons.

5.5 Managing automatic acknowledge rules

You have the option to automate the acknowledgement of downtimes for certain stations. This can be helpful, for example, if you already know that a machine produces a lot of stoppages in a short period of time and you cannot immediately eliminate the reason for the stoppage. Or if there are repeated (planned) downtimes for inserting or removing parts at the beginning or end of a machine line.

RECOMMENDATION: Limit the conditions for the automatic acknowledge rule as precisely as possible. This is the only way to ensure that other, possibly unplanned downtimes are not automatically acknowledged and thus lost in your statistics.

The time until a downtime is triggered is not relevant; the acknowledgement refers exclusively to the duration of the downtime. The rule with the longest time is considered first.

1. On the **Administration** page, click **Auto acknowledge rules**.

All rules that are created are listed.

Description	Reason	Duration operation	Duration	Stations
Power outage	Electrical malfunction	>	14370	Linie_1-DMC-560, Linie-2-DMG MORI
Team building	Coffee break	>	300	Linie-2-DMG MORI

Fig. 11: Administration > Auto acknowledge rules

2. To create a new rule, click **Add acknowledge rule**.

The setup wizard opens to guide you through the creation. Confirm your entries with **Enter** or **Next**.

3. Enter a meaningful **Description** for the auto acknowledge rule.
4. Select a **Reason** with which to automatically acknowledge.
5. Under **Operation**, select the operation that should be used to compare the duration of the downtime.
 - o **Duration is above (>):** If the downtime to be acknowledged is longer than the downtime duration entered below, then the rule is applied.
 - o **Duration is below (<):** If the downtime to be acknowledged is shorter than the downtime duration entered below, then the rule is applied.
6. Enter the **Duration** (in seconds) to be used for the comparison.

Only if the downtime is longer or shorter than the duration entered here, the auto acknowledge rule is applied.
7. Under **Stations** you now select the station that triggers the downtime (i.e. is the first to stop) and for which the auto acknowledge rule is to apply.
8. When you have made all the entries, click **Finish**.

The list with all auto acknowledge rules appears again.
9. If you want to edit a rule, select it and click **Edit** or double-click.

A page opens where you can see all the settings of the rule at a glance and also edit them.

To save your changes, click **Save & Close**.
10. If you want to duplicate a rule, select it and click **Duplicate**.

You will return to the setup wizard where you can customize the rule.
11. To delete an auto acknowledge rule, click **Remove**.

5.6 Resetting downtimes

1. On the **Administration** page, click **Reset downtimes**.
2. Click **Delete data** to delete all downtimes.

A message will be displayed asking if you really want to delete the data.

3. Click **Yes**.

The downtimes are deleted. All data entered for the stations and lines are retained.

5.7 Exporting a CSV file

1. On the **Administration** page, click **Export CSV file**.
2. Click **Export**.

The download will start.

5.8 Optional: Configuring the communication for MADOW MASTER

If there is a master gateway on which all machine monitoring runs together, then you can make various settings to define communication to the master gateway.

1. In the MADOW app, navigate to the administration area and log in.

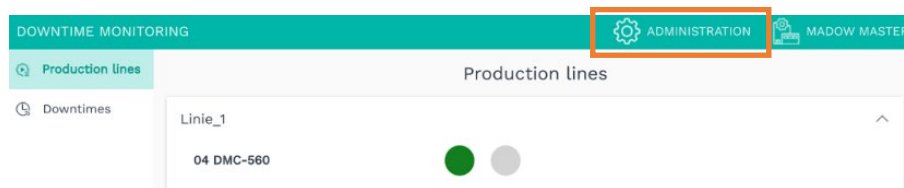


Fig. 12: MADOW > Administration area (exemplary representation)

2. Click **Master settings**.

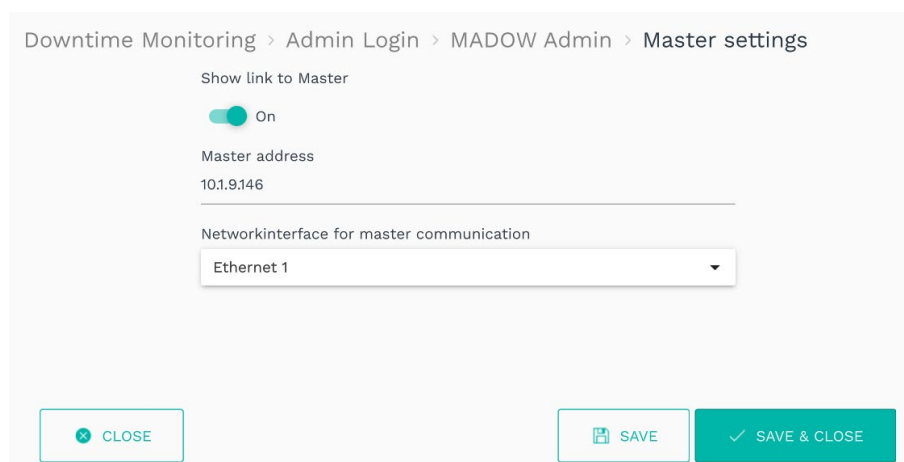
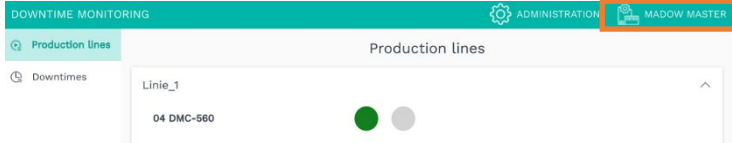


Fig. 13: Administration > Master settings (exemplary representation)

4. Make the settings you want:

<p>Show link to master</p>	<p>Set the slider to On if you want the MADOW MASTER button to be displayed in the MADOW app.</p> <p>Anyone who works with MADOW can open the floor plan.</p>  <p>-or-</p> <p>Set the slider to Off if only authorized persons are allowed to view the floor plan.</p> <p>You can then reach the MADOW MASTER only via the IP address or the host name, which you can provide to selected persons.</p>
<p>Master address</p>	<p>Enter the network address or host name of the master gateway, which is connected to all other gateways in the workshop and through which you receive the signals of all gateways.</p> <p>NOTE: Only if an IP address is entered here, MADOW MASTER retrieves the downtimes from MADOW and can visualize them in the floor plan.</p>
<p>Network interface for master communication</p>	<p>Select the network you have access to for communication with the master gateway.</p>

5. Click **Save & Close**.

You will be taken back to the administration area.

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