

DatAIndustry

version 1.0

seioTec GmbH

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User documentation

Introduction

datAIndustry App by seioTec

Process-oriented approach to use AI methods based on machine data from production.

The seioTec datAIndustry App enables a process-oriented approach to use AI methods based on your machine data. Successful industrial AI requires valid data aggregation, labeled and pre-processed. The data is enriched with domain and process knowledge and the effort for subsequent data analytics is extremely shortened.

- Transparency of your production processes
- Basis for more effective development of your own AI applications.
- Time and cost savings of your AI projects through initial data analysis at the Shop floor

Design your individual analysis board for your production processes!

Display your machine and operating data, such as voltage, current, speed, temperature, machine status (downtime / runtime), produced quantities and many more. The design of our analysis board is simple and intuitive.

Enjoy the most dynamic zooming while viewing your data!

Historical and online machine and operation data with a resolution of several years down to milliseconds can be combined in real time without long loading times. Dynamic zooming in any time direction is possible without averaging or smoothing due to the smart seioTec zoom algorithm.

Getting started with using AI algorithms on your data!

The datAIndustry app offers you the basis for using artificial intelligence in your production, for example predictive maintenance with the seioTec MaintApp. In that way you can use already existing machine data for AI algorithm training. For this purpose, the datAIndustry App offers data labeling and parameterization of e.g. low pass filters or in combination with other filters at a central point for subsequent AI processes or modeling software (data provision for external modules via integrated data export functionality).

The choice is yours: edge or cloud!

You can choose to integrate the datAIndustry App locally at the machine (Edge) or in your enterprise cloud infrastructure. The Web-based UI is accessible from various browsers like Chrome, Firefox and Safari.

For more information, please visit www.seiotec.com/dataindustry.

Dashboard



Load and save templates

(buttons 1 and 2)

Via the 1 button, a previously saved template can be loaded.

Via the 2 button, the settings for the chart can be saved as a template. For each channel, all settings made are saved:

- selected value / time series
- assigned Y-axis in the chart
- scaling of the Y-axis
- color of the graph
- activation/deactivation of the channel

The saved templates can be renamed and deleted in the Settings section.

Display current and historical data

(buttons 3 and 4)

In the chart, either the current data is displayed and continuously updated or the data of a selected period from the past is shown. The 3 button starts and pauses the display of continuously updated data.

The selection of the time period can be made directly in the chart.

- with the mouse:
 - To zoom in/out the displayed period, the cursor is placed on the chart and the mouse scroll wheel can be used.

Dashboard

- To select the time point, the chart is dragged or pushed to the desired time point with the mouse.
- on the touchpad:
 - To zoom in/out the displayed time period, the chart is pulled apart or pushed together with two fingers.
 - To select the point in time, the chart is dragged or pushed to the desired point in time with one finger.

Alternatively, the period can be selected from a calendar with the 4 button.

Save chart as image

(button 5)

An image of the chart can be saved using the 5 button.

Add, delete and scale channels

(buttons 6 to 10)

The channels displayed in the chart are added with the 6 button. In the selection dialog the parameter to be displayed is selected and the position of the Y-axis is set. For each added channel a separate list item for settings is displayed:

7	8	Achse	9	Parameter	Einheit	Wert	Zeitstempel	Min	Max	Avg	SD	Integral	10
<input type="checkbox"/>	<input type="checkbox"/>	Ausgeblendet		AM_MillShutdownBySystem	--	0	3. Feb. 2022 17:43:11	--	--	--	--	--	⋮
<input type="checkbox"/>	<input type="checkbox"/>	Ausgeblendet		AM_MillShutdownByOperator	--	0	3. Feb. 2022 17:43:11	--	--	--	--	--	⋮
<input type="checkbox"/>	<input type="checkbox"/>	Links		AM_Vibration_S61AM1888V1	mm/s	0,03	3. Feb. 2022 17:43:11	0,00	2,32	0,81	0,28	10617,63	⋮
<input type="checkbox"/>	<input type="checkbox"/>	Rechts #2		AM_MainDrive2TorqueMotor_S61MD1301TQ1	Nm	0,00	3. Feb. 2022 17:43:11	0,00	243,10	195,83	54,60	2564935,70	⋮
<input type="checkbox"/>	<input type="checkbox"/>	Rechts		AM_MainDrive1TorqueMotor_S61MD1201TQ1	Nm	0,00	3. Feb. 2022 17:43:11	0,00	243,10	195,41	54,50	2559542,29	⋮

The 7 button can be used to hide the channel and its associated Y-axis from the chart. The channel can be removed from the chart again using the “Delete channel” entry in the menu (button 10).

The value range of the Y-axis can be adjusted via the Settings button (10).

Please note that this value range can only be selected within the limits set for the parameter. (the limits for the parameter are set in the Settings area)

Change assignment of parameter, Y-axis and color of a channel

(buttons 8 to 10)

The assignment of the displayed parameter, Y-axis is done in the settings (button 10) and the color of the graph for a channel can be changed directly in the menu (button 8). The assignment (right or left) and hiding of the axis is done directly in (button 9)

The screenshot shows the 'Verbindungen' (Connections) section of the datAIndustry dashboard. The breadcrumb trail is 'Einstellungen > Verbindungen > Verbindung 5'. A table lists various parameters for different connections. Each row includes a connection name, parameter name, data type, lower limit, upper limit, unit, and an 'Aktiv' (Active) status with an edit icon.

Verbindungen		Einstellungen > Verbindungen > Verbindung 5					
		Name	Datentyp	Untergrenze	Obergrenze	Einheit	Aktiv
PLC_2 OPC UA		Außenleiterspannung U12	Real	400,00	430,00	V	ja
		Außenleiterspannung U23	Real	400,00	430,00	V	ja
PLC_1 S7		Außenleiterspannung U31	Real	400,00	430,00	V	ja
		Frequenz	Real	49,5	50,5	Hz	ja
PLC_1 IOTHUB		Gesamtwirkleistung	Real	0,00	21000,00	W	ja
		Leiterspannung U1	Real	210,00	250,00	V	ja
EMpro Modbus TCP		Leiterspannung U2	Real	210,00	250,00	V	ja
		Leiterspannung U3	Real	210,00	250,00	V	ja
Vorlagen		Leiterspannung U3	Real	210,00	250,00	V	ja
Info							

In the selection field 10 a new parameter can be assigned to the channel for display.

The used Y-axis can be changed in the selection field 9. When selecting the axis labeled "Hidden", the Y-axis for this channel is hidden in the chart (the graph remains visible).

The 8 button opens a window where the color for the display of the channel can be set.

Export

Step 1: Select plant

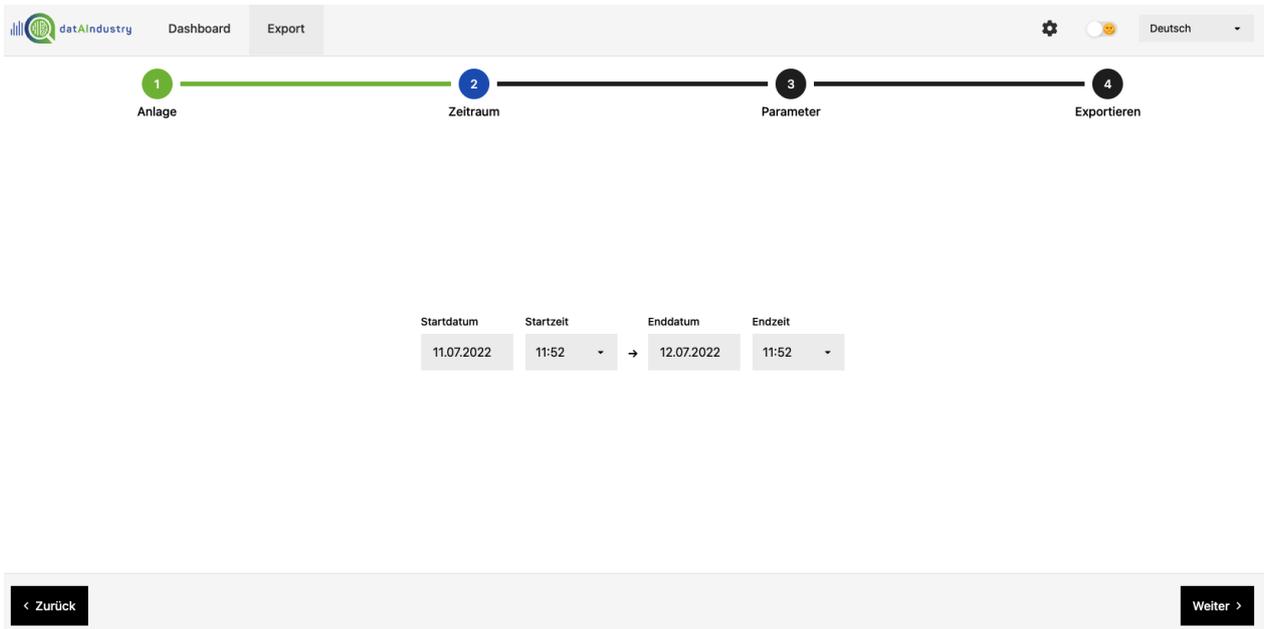
Step 1 is to specify for which asset / connection the data export should be done:



The selection is made by activating the corresponding button.

Step 2: Set time period

In step 2 you can specify a time period for the export:



Export

Step 3: Selection of parameters

Step 3 defines for which parameters data should be exported:

The screenshot shows the 'Export' step in the datAIndustry interface. The progress bar indicates that step 3, 'Parameter', is the current step. The table below lists 21 parameters, all of which are selected (checked). The parameters are:

Parameter	Name
<input checked="" type="checkbox"/>	1 AM_BeforeClassifierPressure_561SR1891P1
<input checked="" type="checkbox"/>	2 AM_BucketElevatorCurrentMotor_561BE4071
<input checked="" type="checkbox"/>	3 AM_ClassifierBearingVibration_561SR1889V1
<input checked="" type="checkbox"/>	4 AM_ClassifierSpeedMotor_561SR1404S1
<input checked="" type="checkbox"/>	5 AM_Cylinder1Distance_561HS1886D1
<input checked="" type="checkbox"/>	6 AM_Cylinder2Distance_561HS1887D1
<input checked="" type="checkbox"/>	7 AM_CylinderPressure_561HS1884P1
<input checked="" type="checkbox"/>	8 AM_DosingWeightFeeder_561BW1721F1
<input checked="" type="checkbox"/>	9 AM_DryerStatusCommandStart
<input checked="" type="checkbox"/>	10 AM_DryerStatusFeedbackOn
<input checked="" type="checkbox"/>	11 AM_DryerStatusNoGeneralFault
<input checked="" type="checkbox"/>	12 AM_FanClassifierBearingTemp1_561FN4895T1
<input checked="" type="checkbox"/>	13 AM_FanClassifierBearingTemp2_561FN4896T2
<input checked="" type="checkbox"/>	14 AM_FanClassifierBearingVibration1_561FN4890V1
<input checked="" type="checkbox"/>	15 AM_FanClassifierBearingVibration2_561FN4890V2
<input checked="" type="checkbox"/>	16 AM_FanClassifierSpeedMotor_561FN4401S1
<input checked="" type="checkbox"/>	17 AM_MainDrive1CurrentMotor_561MD1201I1
<input checked="" type="checkbox"/>	18 AM_MainDrive1PowerMotor_561MD1201P1
<input checked="" type="checkbox"/>	19 AM_MainDrive1SpeedMotor_561MD1201S1
<input checked="" type="checkbox"/>	20 AM_MainDrive1TorqueMotor_561MD1201TQ1
<input checked="" type="checkbox"/>	21 AM_MainDrive2CurrentMotor_561MD2301I1

At the bottom of the interface, there are buttons for '< Zurück' and 'Weiter >', and a status message '46 von 46 Parametern ausgewählt'.

The top button (parameters) is used for quick activation/deactivation of all entries in the list.

The order of each parameter can be changed by dragging and dropping them to the desired position in the list.

Step 4: Selecting the export format and run the export

Step 5 defines in which format the selected data should be exported:



A dropdown menu showing 'CSV|' with a downward arrow. Below it, a list of options is visible: 'CSV', 'JSON', and 'PARQUET'. To the right of the dropdown is a black button with white text that says 'Export starten'.



The format is selected by activating the corresponding checkbox.

The “Start export” button starts the export process. After the export is finished, the result can be saved in the file system (file handling via browser).

Settings

Parameters

The screenshot shows the 'Parameters' section of the datAIndustry settings. The breadcrumb trail is 'Einstellungen > Verbindungen > Verbindung 5'. The interface includes a sidebar with navigation options: 'Verbindungen', 'PLC_2 OPC UA', 'PLC_1 S7', 'PLC_1 IOTHUB', 'EMpro Modbus TCP', 'Vorlagen', and 'Info'. The main table lists parameters with columns for Name, Datentyp, Untergrenze, Obergrenze, Einheit, and Aktiv. Each row has a pencil icon for editing.

Name	Datentyp	Untergrenze	Obergrenze	Einheit	Aktiv
Außenleiterspannung U12	Real	400,00	430,00	V	ja
Außenleiterspannung U23	Real	400,00	430,00	V	ja
Außenleiterspannung U31	Real	400,00	430,00	V	ja
Frequenz	Real	49,5	50,5	Hz	ja
Gesamtwirkleistung	Real	0,00	21000,00	W	ja
Leiterspannung U1	Real	210,00	250,00	V	ja
Leiterspannung U2	Real	210,00	250,00	V	ja
Leiterspannung U3	Real	210,00	250,00	V	ja

The parameters are edited using the pencil icon.

Upper and lower limits determine the minimum and maximum values of the Y-axis in the chart. Optionally, a unit can be defined. A parameter can be activated or deactivated via the “Active” column.

The number of decimal places displayed is taken from the settings for the lower and upper limit of the respective parameter. For example:

- Lower limit: 0 . 00 Upper limit: 100 . 00 - this parameter is displayed with two decimal places
- Lower limit: 0 . 0 Upper limit: 100 . 0 - this parameter will be displayed with one decimal place

Settings

Templates

The screenshot shows the 'Templates' settings page. The sidebar on the left has two main sections: 'Verbindungen' (Connections) and 'Vorlagen' (Templates). Under 'Verbindungen', there are four entries: 'PLC_2 OPC UA', 'PLC_1 S7', 'PLC_1 IOTHUB', and 'EMpro Modbus TCP'. Under 'Vorlagen', there is one entry: 'Info'. The main content area is titled 'Einstellungen > Vorlagen' and contains a table with the following data:

Name
Original-HMI22

The top navigation bar includes the 'datAIndustry' logo, 'Dashboard', and 'Export' buttons. On the right side of the top bar, there are icons for settings, a user profile, and a language dropdown menu currently set to 'Deutsch'.

Info

The screenshot shows the 'Info' settings page. The sidebar on the left has two main sections: 'Verbindungen' (Connections) and 'Info'. Under 'Verbindungen', there are four entries: 'PLC_2 OPC UA', 'PLC_1 S7', 'PLC_1 IOTHUB', and 'EMpro Modbus TCP'. Under 'Info', there is one entry: 'Info'. The main content area is titled 'Einstellungen > Info' and displays the text 'Version: 1.0.21+edge (2d2beae)'. The top navigation bar includes the 'datAIndustry' logo, 'Dashboard', and 'Export' buttons. On the right side of the top bar, there are icons for settings, a user profile, and a language dropdown menu currently set to 'Deutsch'.

The current version number of the program is displayed here.