



BATTERY CHARGING STATION "CHARGE MANAGER 2024"

INSTRUCTIONS FOR THE SOFTWARE

ltem no. 2002024



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1. FUNCTIONS OF THE "CM2024 LOGGER" SOFTWARE

- Display of the selected programme, the current programme section, the rechargeable battery chemistry, the time and charging parameters, such as voltage and charging current
- · Recording the progress of voltage, current, charging and discharging capacity, etc.
- · Graphical illustration of the progresses of voltage and current in chart form
- · Print function for measuring logs
- · Saving, loading, pausing and continuing recordings
- · Export of the recorded data to Excel (from Version 2010 or higher) including generation of voltage and current charts
- · Export of the recorded data as CSV file (= "Comma Separated Values") for reading into all common spreadsheet programmes
- · Input and start of charging programmes
- · Import of the records from the SD memory card

System Requirements:

- · Windows operating system from Windows XP with SP3 or higher
- Net Framework V4.0 (Client Profile)
- Resolution at least 1280 x 768

2. INSTALLATION OF THE "CM2024 LOGGER" SOFTWARE

After the operating system has been fully loaded, start installation of the software and follow the instructions of the installation programme or your operating system.

- Note:

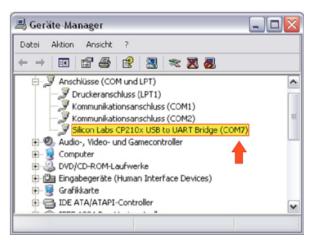
Before connecting the "Charge Manager 2024" to the computer, always install the driver software ("Silicon Labs CP210x USB-UART Bridge") according to the instructions of the installation programme.

The latest driver version can be found under http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx

After completion of the software and driver installation, connect the "Charge Manager CM2024" to a free USB port of your computer with a suitable connection cable. The charger has a USB interface for this (USB-B socket at the rear of the device).

Windows recognises the new hardware when it is connected for the first time and completes the installation of the required drivers.

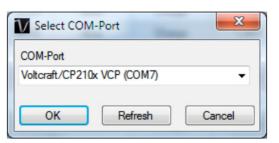
In the Windows control panel, you can check in the device manager which COM port has been awarded to the "Charge Manager 2024" (e.g. "COM7", see arrow in the following figure).



Now software installation has been completed.

3. GETTING STARTED

At the first start of the software, you need to select the COM port of the "Charge Manager 2024" according to the entry in the control panel (in this example "COM7".



This setting can be changed under "Settings/COM-Port" later.

After confirming the selection with "OK", the main window of the software appears.



By clicking the button "Start Logging" (upper left), recording of the data will be started (the button switches its colour from red to green and the label switches to "stop logging").

The charger must be in operation, i.e. the display lighting of the "Charge Manager 2024" is on.

To terminate data recording, click the button again. The colour changes back to red (and the label of the button back to "Start Logging", see above).

If no data are recorded by the charger for more than approx. 10 seconds because, e.g., the connection to the charger has been disconnected, the programme will automatically interrupt data recording. Continuation of the recording is possible.

4. OPERATION OF THE SOFTWARE

View during data recording:

				0	2	\bigcirc							\bigcirc		
			(1)	C	\mathcal{O}	(\mathcal{Y})	(4	(5)				Ý	(\mathcal{P}
V Charge	Manager 2024	- Log	ging active	-		-									
	Logging	_	File -		ngs - 🖳	Export	- 📉 Di	splay -	Print	About			Clear Data	- Auto	scroll Off
Slot S1	NiMH/Cd	S	Time	Program	Actual	Voltage[V]	Current[A]	CCAP[mAh]	DCAP[mAh]	Chemistry 4	Line	Bargraph Area	3D-Line	Slot S2	NiZn 🛛
Program:		1	0/00:00	Cycle	Charging	1,383	0,500	0,00	0,00	NiMH/Cd =	1,600	Slot	1	Program:	
Act. Step: C-CAP:	Discharging 731,85mAh	1	0/00:01	Cycle	Charging	1,379	0,516	8,61	0,00	NiMH/Cd				Act. Step: C-CAP:	Ready 385,40mAh
D-CAP:	3624,20mAh	1	0/00:02	Cycle	Charging	1,382	0,516	17,22	0,00	NiMH/Cd	1,400	\sim		D-CAP:	0,00mAh
Voltage: Current:	1,268V 0,232A	1	0/00:03	Cycle	Charging	1,384	0,516	25,83	0,00	NiMH/Cd			_	Voltage: Current:	1,792V 0,000A
Time:	0/16:33	1	0/00:04	Cycle	Charging	1,387	0,516	34,44	0,00	NiMH/Cd	1,200			Time:	0/00:42
Slot S3		1	0/00:05	Cycle	Charging	1,387	0,516	43,05	0,00	NiMH/Cd				Slot S4	
Program: Act. Step:		1	0/00:06	Cycle	Charging	1,389	0,516	51,66	0,00	NiMH/Cd	1,000			Program: Act. Step:	
C-CAP:	0,00mAh	1	0/00:07	Cycle	Charging	1,391	0,516	60,27	0,00	NiMH/Cd	a 0.800			C-CAP:	0,00mAh
D-CAP: Voltage:	0,00mAh 1.356V	1	0/00:08	Cycle	Charging	1,393	0,516	68,88	0,00	NiMH/Cd	Voltage [V]			D-CAP: Voltage:	0,00mAh 0,000∨
Current:	0,000A	1	0/00:09	Cycle	Charging	1,394	0,516	77,49	0,00	NiMH/Cd	> 0,600			Current:	0,000A
Time:	0/00:00	1	0/00:10	Cycle	Charging	1,397	0,516	86,10	0,00	NiMH/Cd				Time:	0/00:00
Slot S5 Program:	NiMH/Cd	1	0/00:11	Cycle	Charging	1,397	0,516	94,71	0,00	NiMH/Cd	0,400			Slot S6 Program:	NiZn
		1	0/00:12	Cycle	Charging	1,399	0,516	103,32	0,00	NiMH/Cd				Act. Step:	
C-CAP: D-CAP:	955,67mAh 805,27mAh	1	0/00:13	Cycle	Charging	1,401	0,516	111,93	0,00	NiMH/Cd	0,200			C-CAP: D-CAP:	85,76mAh 0,00mAh
Voltage:	1,362V	1	0/00:14	Cycle	Charging	1,403	0,516	120,54	0,00	NiMH/Cd				Voltage:	1,817V
Current: Time:	0,000A 0/19:25	1	0/00:15	Cycle	Charging	1,404	0,516	129,15	0,00	NiMH/Cd	0,000		0/08:20	Current: Time:	0,000A 0/01:04
	NiMH/Cd	1	0/00:16	Cycle	Charging	1,406	0,516	137,76	0,00	NiMH/Cd			/hours:minutes]	Slot S8	0/01.04
		1	0/00:17	Cycle	Charging	1,410	0,516	146,37	0,00	NiMH/Cd			moursimmutesj	Program:	
Act. Step:	Ready	1	0/00:18	Cycle	Charging	1,410	0,516	154,98	0,00	NiMH/Cd	0,600			Act. Step:	Idle
C-CAP: D-CAP:	895,35mAh 814,74mAh	1	0/00:19	Cycle	Charging	1,411	0,516	163,59	0,00	NiMH/Cd NiMH/Cd				C-CAP: D-CAP:	0,00mAh 0,00mAh
Voltage:	1,372V	1	0/00:20	Cycle Cycle	Charging	1,413 1,414	0,516 0,516	172,20 180,81	0,00	NiMH/Cd				Voltage:	0,000V
Current: Time:	0,000A 0/16:11	1	0/00:21	Cycle	Charging Charging	1,414	0,516	180,81	0,00	NiMH/Cd				Current: Time:	0,000A 0/00:00
	NiMH/Cd	1	0/00:22	Cycle	Charging	1,415	0,516	198,03	0,00	NiMH/Cd				Slot SB	NiMH/Cd
Program:	Maximize	1	0/00:23	Cycle	Charging	1,419	0,516	206,64	0,00	NiMH/Cd	0,400			Program:	Recharge
Act. Step: C-CAP:	Discharging 288,42mAh	1	0/00:24	Cycle	Charging	1,410	0,516	215,25	0,00	NiMH/Cd	E			Act. Step: C-CAP:	Ready 74,85mAh
D-CAP:	67,80mAh	1	0/00:26	Cycle	Charging	1,421	0,516	223,86	0,00	NiMH/Cd	Current [A]			D-CAP:	0,00mAh
Voltage: Current:	8,876V 0,018A	1	0/00:27	Cycle	Charging	1,422	0,516	232,47	0,00	NiMH/Cd	3			Voltage: Current:	9,464V 0,000A
Time:	0/22:04	1	0/00:28	Cycle	Charging	1,424	0,516	241,08	0,00	NiMH/Cd	0,200			Time:	0/02:30
		1	0/00:29	Cycle	Charging	1,424	0,516	249,69	0,00	NiMH/Cd	0,000			T	
		1	0/00:30	Cycle	Charging	1,427	0,516	258,30	0,00	NiMH/Cd					
		1	0/00:31	Cycle	Charging	1,427	0,516	266,91	0,00	NiMH/Cd					
		1	0/00:32	Cycle	Charging	1,429	0,516	275,52	0,00	NiMH/Cd					
		1	0/00:33	Cycle	Charging	1,430	0,516	284,13	0,00	NiMH/Cd	0,000				
		1	0/00:34	Cycle	Charging	1,431	0,516	292,74	0,00	NiMH/Cd	0/0	ó:00	0/08:20		
Waitin	g For Data	1	0/00:35	Cycle	Charging	1,432	0,516	301,35	0,00	NiMH/Cd -	-	Time [days	/hours:minutes]		
(8)				9							(10)		(11)

- 1 Load, save and import recordings from card
- 2 Setting the COM-port/display brightness. Terminating the recording on the SD memory card
- 3 Export to Excel or "CSV-file"
- 4 View: Chart and/or table
- 5 Print measuring log
- 6 Delete recording
- 7 Automatic display of the last measured value in the table
- 8 Display for data reception from the charger
- 9 Display of the recorded data in table form. The data transfer to other programmes via the clipboard is supported.
- 10 Curves of voltage and current. Different display versions can be chosen.
- 11 Parameter display of the charging slot. Clicking selects the corresponding view. If the display has a blue background, the charge programme input is shown after clicking. The "Stop" symbol or right-click cancels the running charge programme.

General Notes:

- The recorded data are always put in interim storage in parallel to the display in the temporary files as well. If there are temporary files at programme start, the programme offers to continue the recording.
- When removing a rechargeable battery during the recording, the associated values are automatically deleted. This ensures data integrity.
- The export functions for "Excel" and "CSV" refer only to the currently chosen charging slot.
- · The print function is not available during data recording.
- The charts are printed out as shown in the software. This means: If a cut-out has been enlarged, the output takes place in this enlarged view as well. Insertion of a title line under indication of the battery slot number, duration, charging and discharging capacity take place automatically. The recommended print format is DIN A4 or DIN A3.
- Loading and saving data via "File" -> "Load Logged Data" or "Save Logged Data" refers to the data of all battery chutes of the "Charge Manager 2024". The temporary data are overwritten in "Load Logged Data".
- The programme ensures uninterrupted data recording by deactivating the energy savings mode of the computer during the recording.

5. STARTING CHARGING PROGRAMMES

Slot S3	Battery Parameters	Program	Charge-/Discharge Current
Program: No Setup	Chemistry	Recharge	Charge-Current Maximum:
Act. Step: Idle C-CAP: 0,00mAh	NiMH/Cd NiZn	Discharge	Automatic
D-CAP: 0,00mAh	Capacity	Procharge	max. 3000mA
Voltage: 0,000V Current: 0,000A	0 🗧 mAh	Cycle	Discharge-Current:
Time: 0/00:00	max. 20000mAh	Alive	750mA
	SD-Recording	Maximize Pause 60 🛖 min.	Cancel Start

If one or several rechargeable batteries are inserted, the parameter display shows "No Setup".

The parameter setup of the battery slot where programme input is possible is displayed in blue. After clicking the parameter display, the charge programme input is now displayed. The parameters suggested by the charger are displayed and can now be changed.

After clicking "Start", the charging programme is executed.



If the charging programme is started at the charger in the meantime, it will be executed with the parameters chosen at the charger. Then the active programme input in the PC software is concealed after starting.

6. CANCELLING CHARGING PROGRAMMES

Slot S3	NiMH/Cd	Cancel Program of Slot 3
Program:	-	Back
C-CAP:	Discharging 0,00mAh	
D-CAP:	263,07mAh	
Voltage:	1,344V	
Current:	0,738A	
Time:	0/00:21	

The current programme of the charging slot can be cancelled via the respective "stop" symbol or by right click on the battery slot display and the final confirmation of "Cancel Program of Slot x".

7. SAVING/LOADING RECORDINGS

File -	
Save L	ogged Data
Load L	ogged Data
Import I	Log File from SD Card
Quit	

The charge curves can be saved on the SD memory card and/or the PC ("Save Logged Data").

When saving on the PC, it must be continually connected to the charger and the recording ("Logging") must be active.

If the charging curves have been recorded on the SD memory card, the data can only be read via a card reader at the PC subsequently ("Import Log File from SD Card"). It is also possible to load the saved records again with this software ("Load Logged Data").

8. USE OF THE WINDOWS CLIPBOARD

In addition to the export function, there is also the option of exporting the recorded data via the Windows clipboard into any spreadsheet programmes, such as "LibreOffice / OpenOffice".

Procedure:

- 1. Select the required cells in the table
- 2. Right-clicking the table shows the following dialogue:

"Copy To Clipboard" copies the selected area or "Copy All..." copies the entire active table into the clipboard.

Copy To Clipboard Copy All To Clipboard

Alternatively, there is also the option of saving selected data by "CTRL+C" (Copy).

3. These data can be directly transmitted to the target table by "CTRL+V" (insert).

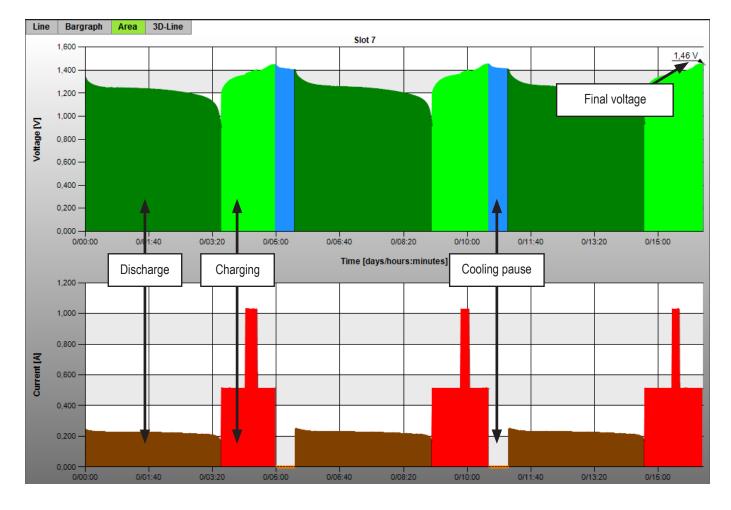
9. DISPLAY OPTIONS

Under "Display Style", you can select the required display. If "Table" is selected, only the data in table form are shown; when selecting "Charts", the illustration of the curves for voltage and current in graphic form is active.

There is also the option of concurrent display of both versions.

2	Display Style	•
~	Table	
~	Charts	

Example: Display version "Charts"



Whether charging or discharging is currently underway is shown by colour:

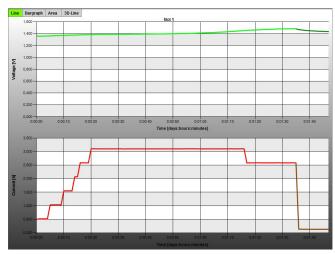
- · Green and red: During the charging phases
- · Dark green and brown: During the discharging phases
- · Blue and orange: Cooling phases in the "Maximize" programme
- Hissing data points (e.g. due to recording pauses) are marked by grey dots.

At the end of the programme, the chart also indicates the final voltage.

10. OPERATION OF THE CHART FUNCTION

Functions:

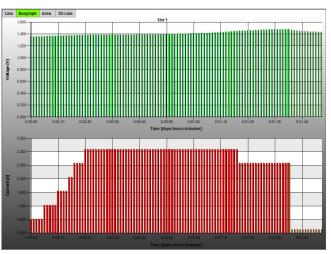
Four views are possible: Line, bar, area chart and lines in 3D perspective ("Tilt" and "Rotation" can be set).



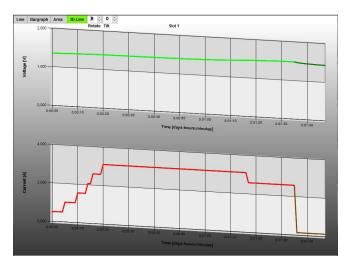




Area chart



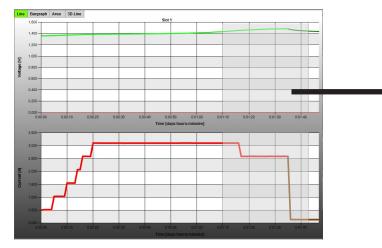
Bar chart

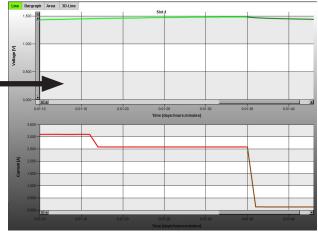


3D-lines

Enlarging to certain areas, "Zoom" by mouse:

Keep the left mouse button pushed in the graphical display and draw a frame over the desired area. After releasing the mouse button, the selected area is shown enlarged.





Alternative:

Move the mouse pointer to the area of the chart and right-click. The following input field appears (see figure on the right).

- "Zoom In" enlarges the view by half of the recording.
- "Reset Zoom" takes you back to the overall view.
- Depending on the pointer position of the mouse, you can also use the scroll wheel to enlarge/reduce.

Moving the displayed areas

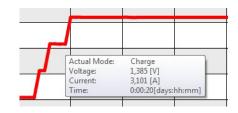
Movement is possible via the cursor buttons on the keyboard (arrows) or the scroll bars at the chart windows.

Further control options via the keyboard

Button	Function
"Home" ("Pos1")	Restore total view (like "Reset Zoom")
"Delete" ("Entf" / "Del")	Jump to the start of the recording
"End" ("Ende")	Jump to the end of the recording
"←" ("Backspace")	Reduce zoom by one level
"Page Up" ("Bild ↑ ")	Move X-axis towards the end in large steps
"Page Down" ("Bild ↓ ")	Move X-axis towards the start in large steps

Display of the data on the mouse pointer position

If the mouse pointer is placed on one of the displayed curves, pushing the right mouse button will return the current values at this time.



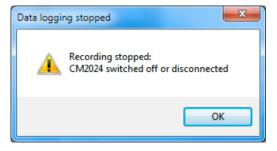
×	Zoom In
\times	Reset Zoom

11. SETUP "SETTINGS"

Settings -	
COM Port	
LCD Brightness	•
Release SD-Card	
"COM Port": Selec	tion of the COM-port (only possible when no recording is running)
"LCD brightness": Settin	ng the display brightness of the "Charge Manager 2024" (only possible when the recording is running
"Release SD-Card": Termin	nate recording on the SD-memory card (only possible when a recording is running)

12. SUSPEND/CONTINUE RECORDINGS

After disconnecting the mains unit of the charger, the following message will be displayed by the software after approx. 10 seconds:



Now close the software. If required, the computer can now be switched off.

The software will offer to continue the recording at the next programme start.

Restore last recording to continue?	
Continue last recording?	
Ja Nein	

You can now take the charger into operation again and then confirm the software message with "Yes". Now the last recorded data are loaded and the recordings are automatically continued.

When selecting "no", the data are deleted and a new recording is started.

If the software has not been terminated, push the button "Start Logging" after taking the "Charge Manager 2024" into operation. The recording is continued here as well.

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