

## Guide on using BMS Tools to view multiple EG4 LL V2 batteries

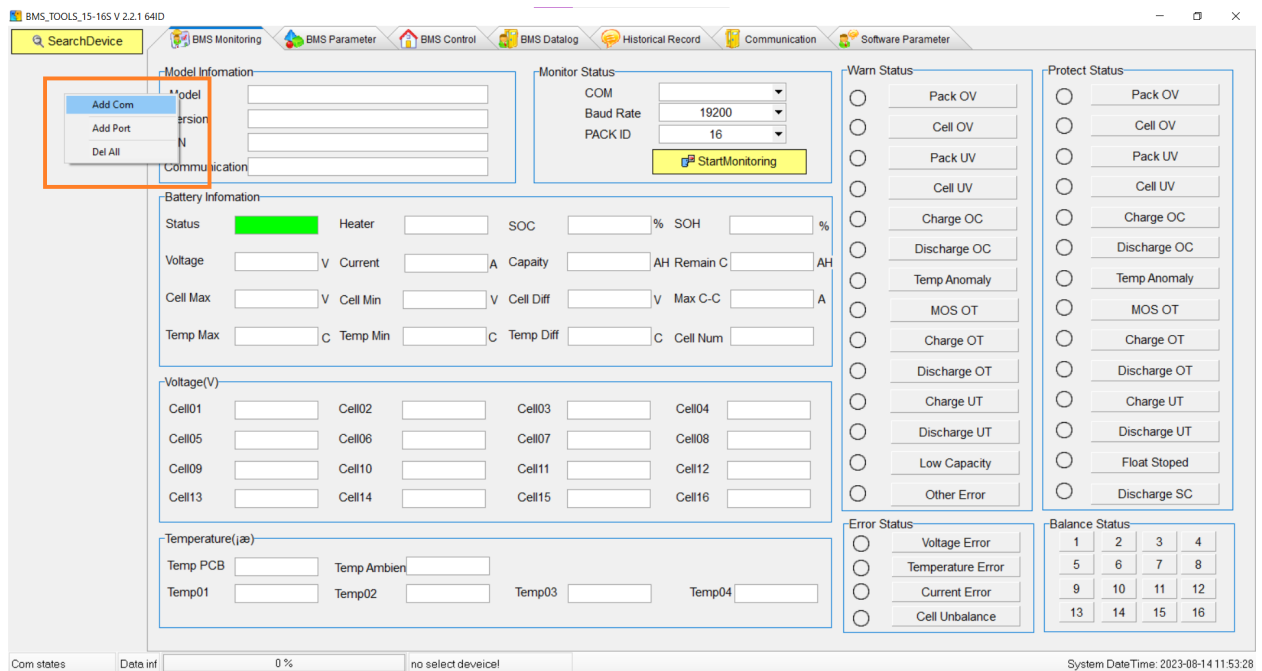
1. After updating the EG4LL V2 (4 dip or 6 dip) batteries with the multipack firmware, connect the USB-A to RS-485 (RJ45 pins, 1-B, 2-A) to the computer, and then to the **battery-com port** on the EG4LL V2.
2. Using device manager, confirm that the RS-485 cable has been recognized as a COM port.
3. ID:1 cannot be used in the multipack, Start the master battery at (ID:16 for 4 dip switch) (ID:64 for 6 dip switch) for pc communication.
4. Skip dip switch (ID:1 Inverter communication) and the next battery will begin at ID:2. From here you can use numerical order for the batteries dip switch ID: numbers.
5. If the dip switch ID: is changed while the battery is powered ON, reset the EG4 LL V2 battery for the dip switch ID: to take place.
6. Open the program BMS Tools V2.2.1, Under the monitor status column, change the baud-rate to 19200, and the COM: to the same COM address the RS485 cable is assigned by Windows.

The screenshot displays the BMS Tools V2.2.1 software interface. The top menu bar includes options like BMS Monitoring, BMS Parameter, BMS Control, BMS Datalog, Historical Record, Communication, and Software Parameter. The main workspace is divided into several panels:

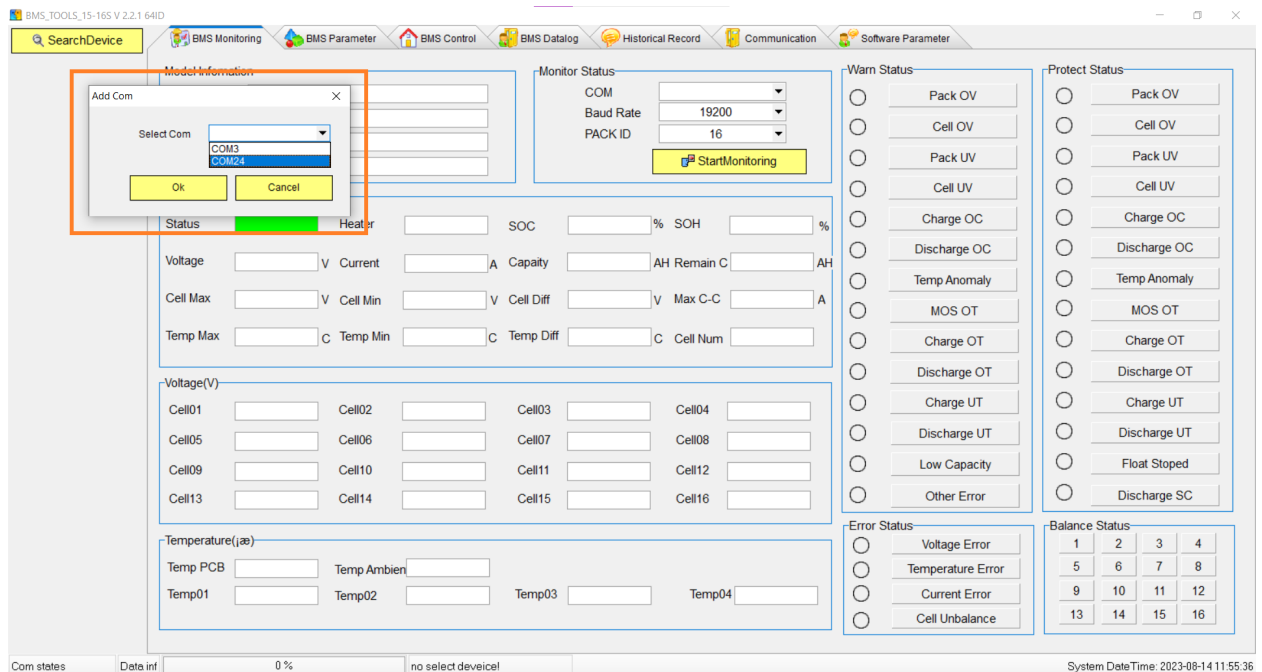
- Model Information:** Fields for Model, Version, SN, and Communication.
- Monitor Status:** A panel with dropdowns for COM (set to COM24), Baud Rate (set to 19200), and PACK ID (set to 16). It includes a "Start Monitoring" button.
- Battery Information:** Fields for Status, Heater, SOC, SOH, Voltage, Current, Capacity, AH, Remain C, Cell Max, Cell Min, Cell Diff, Max C-C, Temp Max, Temp Min, Temp Diff, and Cell Num.
- Voltage(V):** A grid of 16 input fields for individual cell voltages (Cell01 to Cell16).
- Temperature(°C):** Fields for Temp PCB, Temp Ambien, Temp01, Temp02, Temp03, and Temp04.
- Warn Status:** A list of warning indicators with radio buttons, including Pack OV, Cell OV, Pack UV, Cell UV, Charge OC, Discharge OC, Temp Anomaly, MOS OT, Charge OT, Discharge OT, Charge UT, Discharge UT, Low Capacity, and Other Error.
- Protect Status:** A list of protection indicators with radio buttons, including Pack OV, Cell OV, Pack UV, Cell UV, Charge OC, Discharge OC, Temp Anomaly, MOS OT, Charge OT, Discharge OT, Charge UT, Discharge UT, Float Stopped, and Discharge SC.
- Error Status:** A list of error indicators with radio buttons, including Voltage Error, Temperature Error, Current Error, and Cell Unbalance.
- Balance Status:** A 4x4 grid of 16 input fields for balance status (1 to 16).

The bottom status bar shows "Com states", "Data inf", "0 %", "no select device", and "System Date/Time: 2023-08-14 10:58:01".

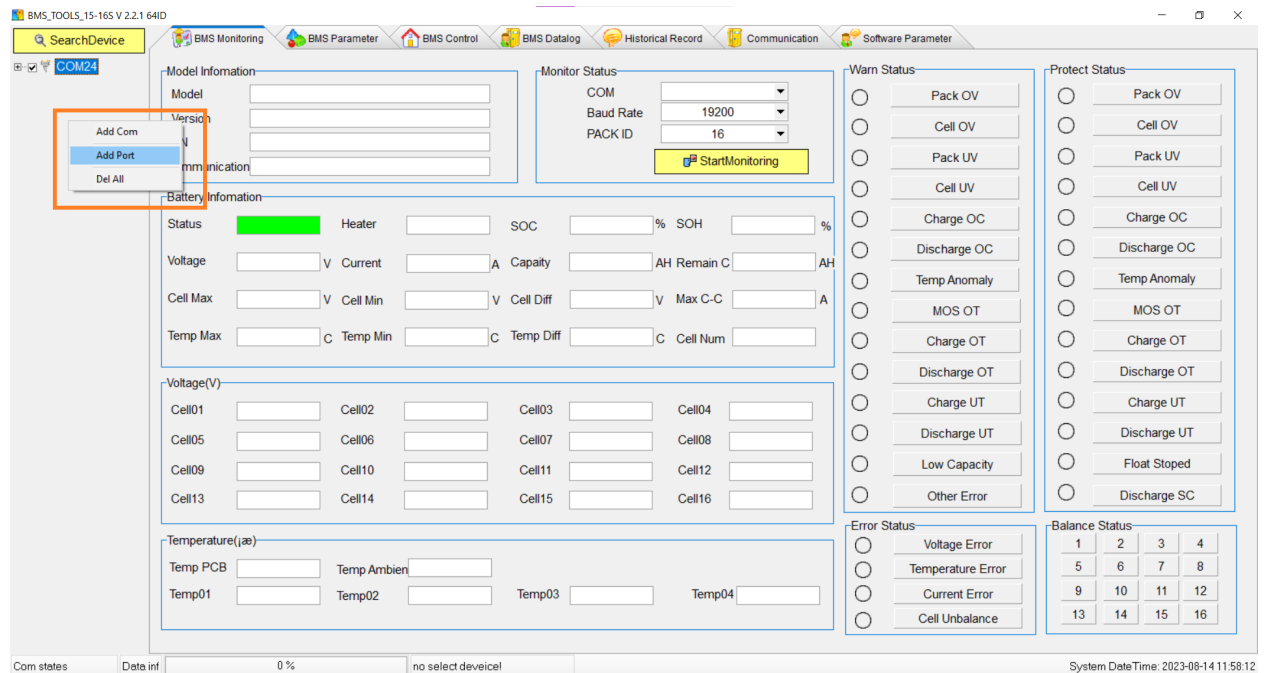
1. In the top left corner under Search Device, right click and select Add Com,



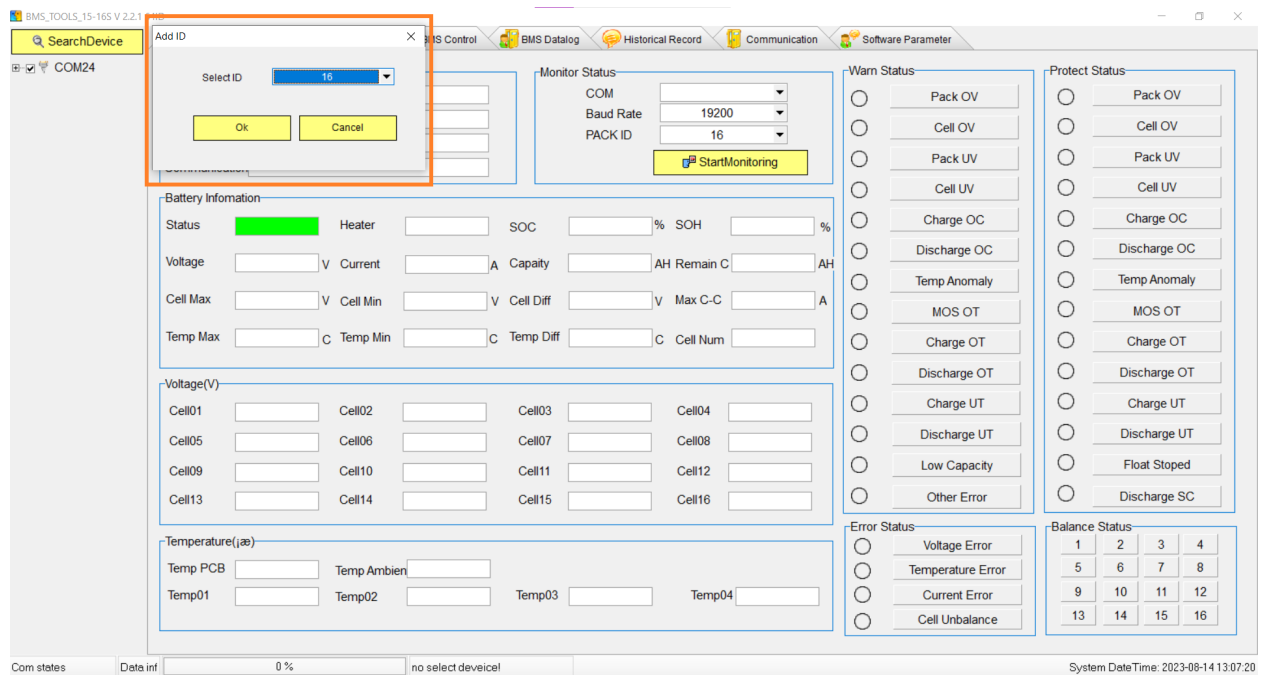
2. Select the correct COM that Windows has assigned the RS485 cable. Now click ok and then click the exit button in the top right corner of this box.



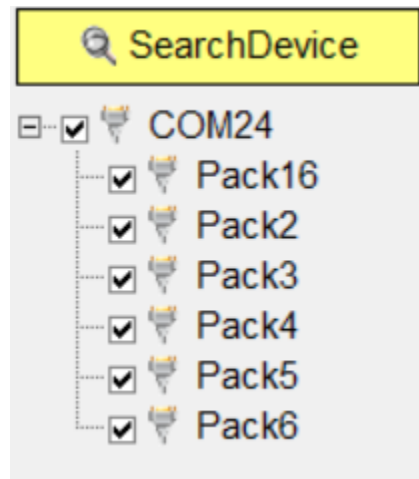
- Now that the COM port has been added, left click on the COM: until it is highlighted blue, and then right click and select add port.



- Select either (ID:16 for the EG4 LL V2 4 dip) or (ID:64 for the EG4 LL V2 6 dip) as the first address. (ID:1 is skipped due to being the Inverter communication) From here manually enter the dip switch ID: numbers that you are going to be monitoring.



5. After adding the amount of pack ID: numbers you are wanting to monitor, check each one.



6. Now click Start Monitoring, The bms data will now be populated depending on the exact pack ID: that is selected.

The screenshot shows the BMS\_TOOLS\_15-16S V.2.2.1 64ID software interface. The 'SearchDevice' dialog is open, showing a list of devices: COM24, Pack16, Pack2, Pack3, Pack4, Pack5, and Pack6. The 'StartMonitoring' button is highlighted with a red box. The main window shows various BMS parameters and status indicators.

**Model Information:**

- Model:
- Version:
- SN:
- Communication:

**Monitor Status:**

- COM: COM24
- Baud Rate: 19200
- PACK ID: 16
- StartMonitoring** (highlighted)

**Battery Information:**

- Status: ☐ Heater:  SOC:  % SOH:  %
- Voltage:  V Current:  A Capacity:  AH Remain C:  AH
- Cell Max:  V Cell Min:  V Cell Diff:  V Max C-C:  A
- Temp Max:  C Temp Min:  C Temp Diff:  C Cell Num:

**Voltage(V):**

Cell01	<input type="text"/>	Cell02	<input type="text"/>	Cell03	<input type="text"/>	Cell04	<input type="text"/>
Cell05	<input type="text"/>	Cell06	<input type="text"/>	Cell07	<input type="text"/>	Cell08	<input type="text"/>
Cell09	<input type="text"/>	Cell10	<input type="text"/>	Cell11	<input type="text"/>	Cell12	<input type="text"/>
Cell13	<input type="text"/>	Cell14	<input type="text"/>	Cell15	<input type="text"/>	Cell16	<input type="text"/>

**Temperature(°C):**

- Temp PCB:  Temp Ambient:
- Temp01:  Temp02:  Temp03:  Temp04:

**Warn Status:**

- ☐ Pack OV
- ☐ Cell OV
- ☐ Pack UV
- ☐ Cell UV
- ☐ Charge OC
- ☐ Discharge OC
- ☐ Temp Anomaly
- ☐ MOS OT
- ☐ Charge OT
- ☐ Discharge OT
- ☐ Charge UT
- ☐ Discharge UT
- ☐ Low Capacity
- ☐ Other Error

**Protect Status:**

- ☐ Pack OV
- ☐ Cell OV
- ☐ Pack UV
- ☐ Cell UV
- ☐ Charge OC
- ☐ Discharge OC
- ☐ Temp Anomaly
- ☐ MOS OT
- ☐ Charge OT
- ☐ Discharge OT
- ☐ Charge UT
- ☐ Discharge UT
- ☐ Float Stopped
- ☐ Discharge SC

**Error Status:**

- ☐ Voltage Error
- ☐ Temperature Error
- ☐ Current Error
- ☐ Cell Unbalance

**Balance Status:**

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

**System Information:**

- Com states: Data inf 0 % no select device!
- System DateTime: 2023-08-14 13:23:25

7. Select the pack ID: drop down and select the ID: number you would like to view. After changing the ID: number the BMS information will automatically populate.

BMS\_TOOLS\_15-165 V 2.2.1 64ID

SearchDevice

BMS Monitoring BMS Parameter BMS Control BMS Datalog Historical Record Communication Software Parameter

COM24  
Pack16  
Pack2  
Pack3  
Pack4  
Pack5  
Pack6

Model Information  
Model LFP-51.2V100Ah-V1.  
Version Z01T16  
SN 2023-07-04  
Communication Online

Monitor Status  
COM COM24  
Baud Rate 19200  
PACK ID 16  
1  
2  
3  
4  
5  
6  
7  
8

Battery Information  
Status Stand by Heater Off SOC 100 %  
Voltage 53.340 V Current 0.000 A Capacity 100 AH Remain C 99 AH  
Cell Max 3.335 V Cell Min 3.332 V Cell Diff 0.003 V Max C-C 100 A  
Temp Max 25 C Temp Min 23 C Temp Diff 2 C Cell Num 16

Voltage(V)  
Cell01 3.332 Cell02 3.335 Cell03 3.334 Cell04 3.334  
Cell05 3.334 Cell06 3.334 Cell07 3.334 Cell08 3.334  
Cell09 3.334 Cell10 3.334 Cell11 3.333 Cell12 3.334  
Cell13 3.334 Cell14 3.335 Cell15 3.333 Cell16 3.334

Temperature(°C)  
Temp PCB 25 Temp Ambient 26  
Temp01 25 Temp02 24 Temp03 24 Temp04 23

Warn Status  
Pack OV  
Cell OV  
Pack UV  
Cell UV  
Charge OC  
Discharge OC  
Temp Anomaly  
MOS OT  
Charge OT  
Discharge OT  
Charge UT  
Discharge UT  
Low Capacity  
Other Error

Protect Status  
Pack OV  
Cell OV  
Pack UV  
Cell UV  
Charge OC  
Discharge OC  
Temp Anomaly  
MOS OT  
Charge OT  
Discharge OT  
Charge UT  
Discharge UT  
Float Stopped  
Discharge SC

Error Status  
Voltage Error  
Temperature Error  
Current Error  
Cell Unbalance

Balance Status  
1 2 3 4  
5 6 7 8  
9 10 11 12  
13 14 15 16

COM24:Open! Data Inf Read Data OK System DateTime: 2023-08-14 13:36:30

8. On the BMS Control tab, To view the cycle counts of one battery, only check mark the battery you are wanting to view the cycle counts.  
You can click GET to see the amount of cycles the battery you are monitoring has.

The screenshot displays the BMS Control tab of a software interface. On the left, a tree view under 'SearchDevice' shows a hierarchy: COM24 (checked), Pack2 (checked), Pack4 (unchecked), Pack6 (unchecked), Pack16 (unchecked), Pack3 (unchecked), and Pack5 (unchecked). The main area is divided into several panels:

- Battery Setting:** Contains input fields for 'Designed Capacity' (100.0 AH), 'Capacity Remaining' (100 %), and 'Cycle Counts' (25 o). It includes 'Get' and 'Post' buttons.
- Charge OCP Model:** Features radio buttons for 'No Current Limit Protection' (selected), 'Current Limiting Charging', 'Precharge Protection', 'After Charging Limit', and 'Precharge+Charge Limit'. A 'Voltage' field is present. It includes 'Get' and 'Post' buttons.
- Float Style:** Features radio buttons for 'Continuous Flotation' (selected), 'Vol Test', 'Time Test', and 'Soc Test'. It includes fields for 'Start Vol', 'End Vol', 'Charge Time', 'Stop Charge Time', 'SOC', and 'SOC Release'. It includes 'Get' and 'Post' buttons.
- BMS Store Style:** Contains 'Standby Interval' and 'Precharge Interval' fields with units in seconds (s). It includes 'Del record', 'Get', and 'Post' buttons.
- Serial No:** Contains 'BMS SN' and 'Set SN' fields, both set to '2023-07-04'. It includes 'Get' and 'Post' buttons.
- Switch Control:** A large panel with multiple checkboxes for various switches, including 'Charge MOSFET Open', 'Discharge MOSFET Open', 'Warn Sound Open', 'Sleep', and various 'Warn Switch' and 'Protect Switch' options. It includes 'Get' and 'Post' buttons.

The bottom status bar shows 'COM24 Open!', 'Data Inf', 'Read Data OK', 'Read Data OK', and 'System DateTime: 2023-08-14 11:36:45'.

9. On the Historical Record tab, Select only the battery ID: number you would like to monitor in real time. You can currently only view the real time data from each battery due to using the RS-485 cable in the battery-com port. To view back logged data, use the RS-485 cable into the RS-485 port on an individual battery and use the BMS Datalog tab.

BMS TOOLS\_15-16S V 2.2.1 64ID

SearchDevice

COM24

Pack16

Pack2

Pack3

Pack4

Pack5

Pack6

BMS Monitoring

BMS Parameter

BMS Control

BMS Datalog

Historical Record

Communication

Software Parameter

RecordId	Address	Date_Time	Status	Master	Warning	Protection	ErrorCode	CycleNum	Current_I	AX_Curren	Total_Voltage	SOC	SOX	Temp_FCB	ip_inter	Temp_MAX	Temp01	Temp02	Temp03	Temp04
1	COM24_16	2023-08-14 13:43:48	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
2	COM24_16	2023-08-14 13:43:51	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
3	COM24_16	2023-08-14 13:43:53	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
4	COM24_16	2023-08-14 13:43:56	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
5	COM24_16	2023-08-14 13:43:58	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
6	COM24_16	2023-08-14 13:44:01	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
7	COM24_16	2023-08-14 13:44:03	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
8	COM24_16	2023-08-14 13:44:06	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
9	COM24_16	2023-08-14 13:44:09	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
10	COM24_16	2023-08-14 13:44:11	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
11	COM24_16	2023-08-14 13:44:14	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
12	COM24_16	2023-08-14 13:44:17	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
13	COM24_16	2023-08-14 13:44:19	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
14	COM24_16	2023-08-14 13:44:49	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
15	COM24_16	2023-08-14 13:44:52	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
16	COM24_16	2023-08-14 13:44:54	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
17	COM24_16	2023-08-14 13:44:57	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
18	COM24_16	2023-08-14 13:44:59	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
19	COM24_16	2023-08-14 13:45:02	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
20	COM24_16	2023-08-14 13:45:04	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
21	COM24_16	2023-08-14 13:45:07	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
22	COM24_16	2023-08-14 13:45:10	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
23	COM24_16	2023-08-14 13:45:13	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
24	COM24_16	2023-08-14 13:45:15	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
25	COM24_16	2023-08-14 13:45:18	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
26	COM24_16	2023-08-14 13:45:20	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
27	COM24_16	2023-08-14 13:45:23	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
28	COM24_16	2023-08-14 13:45:25	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
29	COM24_16	2023-08-14 13:45:28	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
30	COM24_16	2023-08-14 13:45:30	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
31	COM24_16	2023-08-14 13:45:33	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
32	COM24_16	2023-08-14 13:45:36	Stand by	OFF	0000	0000	0000	26	0.000	100	53.330	100	100	25	27	25	25	24	24	23
33	COM24_16	2023-08-14 13:45:38	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
34	COM24_16	2023-08-14 13:45:41	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
35	COM24_16	2023-08-14 13:45:43	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
36	COM24_16	2023-08-14 13:45:46	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
37	COM24_16	2023-08-14 13:45:49	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
38	COM24_16	2023-08-14 13:45:52	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23
39	COM24_16	2023-08-14 13:45:54	Stand by	OFF	0000	0000	0000	26	0.000	100	53.340	100	100	25	27	25	25	24	24	23

Query By Date

Begin Date: 2023-08-14

End Date: 2023-08-14

Query By Address

Select Address: COM24\_16

Query Data

Print Data

Export Data

Clear Data

COM24 Open!

Data inf

Read Data OK

System Date Time: 2023-08-14 13:45:54