

# **Energy Monitoring & Analysis System**

Version 5.1

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## Contents

Intr	Introduction1				
1.	Log	onto	EMA Website	2	
2.	Mo	nitor	ing and Analysis	3	
2	.1	Intr	oduction to Your System Dashboard	3	
2	.2	Viev	w Individual Module Performance	6	
2	.3	Viev	<i>w</i> System Reports	8	
	2.3.	1	Summary Report	9	
	2.3.	2	System Data	10	
	2.3.	3	Download Report	12	
3.	Syst	tem l	Management	14	
<b>3.</b> 3	Syst	<b>tem</b> l Sett	Management	<b>14</b> 14	
<b>3.</b> 3	Syst .1 3.1.	tem I Sett	Management ing Account Details	<b>14</b> 14 14	
<b>3.</b> 3	Syst .1 3.1. 3.1.	tem   Sett 1 2	Management ing Account Details Account Security	<b>14</b> 14 14 16	
<b>3.</b> 3	Syst .1 3.1. 3.1. .2	tem I Sett 1 2 Hist	Management ing Account Details Account Security ory	<b>14</b> 14 14 16 17	
<b>3.</b> 3	Syst .1 3.1. 3.1. .2 3.2.	tem I Sett 1 2 Hist 1	Management ing Account Details Account Security ory ECU History	<b>14</b> 14 16 17 17	
<b>3.</b> 3	Syst .1 3.1. 3.1. .2 3.2. 3.2.	tem I Sett 1 2 Hist 1 2	Management ing Account Details Account Security ory ECU History Inverter History	<b>14</b> 14 16 17 17 18	
<b>3.</b> 3 3	Syst .1 3.1. 3.1. .2 3.2. 3.2. .3	tem I Sett 1 2 Hist 1 2 Helf	Management ing Account Details Account Security cory ECU History Inverter History	<b>14</b> 14 16 17 17 18 18	
<b>3.</b> 3 3 3 3	Syst .1 3.1. .2 3.2. 3.2. .3 .4	tem I Sett 1 2 Hist 1 2 Help Vers	Management ing Account Details Account Security ory ECU History Inverter History sion History	14 14 16 17 17 17 18 18 19	

### Introduction

The APsystems EMA, our robust wireless Energy Monitoring and Analysis software, enables comprehensive, web-based monitoring that analyzes and reports the performance of each module in your solar array. This real-time data can be accessed from any web-connected device, anywhere, anytime.

Unlike conventional "string" inverter monitoring, the APsystems EMA allows users to view each individual module and microinverter in the solar array, for more detailed performance data and improved troubleshooting. Networked with the advanced APsystems ECU, the APsystems EMA promptly detects any performance issues in your solar array, pinpointing the location and nature of the problem and providing precise guidance for necessary maintenance, all within our user-friendly graphic interface.

#### **Features**

- Monitor and allows analysis of each solar module and microinverter
- Allow remote access to the solar array
- Show performance issues and alerts the user to inverter events
- Communicate in real time

### **1. Log onto EMA Website**

- Go to http://apsystems.com/
- > Click the orange "EMA Login" in the upper right corner of the screen to enter the EMA login page,



Enter your "Login Account" and "Password",





expected.

Grey (No Data) – There is a system malfunction that should be investigated. No Production data is being communicated to the EMA server. Check the ECU connection to see if you can isolate the problem. If not, contact your installer.

- Settings Tab Where you can change your personal information, including your password.
- Daily Power The amount of power generated during the current day.

Lifetime Power The amount of power the system has generated during its lifetime.



- CO<sub>2</sub> Equivalent The equivalent amount of CO<sub>2</sub> (expressed in tons) benefit the system has provided in its lifetime.
- System Information The current date and time for the system, and the date the original account was created.
- System Picture Display uploaded system photos. This area is automatically hidden when no photo is uploaded



Current Daily Power Graph	Graphic representation of the power being generated during the current day.
Current Weekly	Graphic representation of the energy that has been generated each
Power Graph	ady during the current seven day period.
Yearly Energy by	Graphic representation of the energy that has been generated each month during the last 12 month period.
Month Graph	
🌲 Note	

The dashboard of a system with a smart electricity meter installed is not the same as the dashboard of a simple PV system.



Self-consumption Power generation and consumption ratio of the system on that day.

Continued ...

### 2.2 View Individual Module Performance

Select the "MODULE" icon at the top of the page.

	Modu	ule Icon		
APsystems		SETTING		English   Settings   Sign out Shanghai,Chine's Mainland
O Normal	5.99 Teachte meanachth	(E) 4.81	3.54	System Time : 2023-03-28 09:55:48
System Status	Long A 2 CHE GAR WILL	Life i mine ( MANIE)	Luz(i)	SYSTEM INFORMATION

The Module Performance page is displayed.

ECU Identification Number	Group View Name	Viewing Period		
	HEPORT SETTIN		Englist	i Settings   Sign 書兴 "Zhejiang,China's Mar
EGJ: 230000065718 + DS3.dems.JMG + Prever in 254 256 254 257 257 000293 000382 000335 000352 000363	Dey(e) 👻 💼 2023-03-26 🕨 Time: 11:40.4	.2 Play speed:	мс	× / / (
251 250 247 248 000253 000382 000305 000352 000363				
Panel information:		1	Navigation dia	gram:
Position: 1 , 1 Orientation: vertical UID:: 704000000253-1 Module Type JC305M-24/Abs Inverter Type DS3 STC power: 305 W	07:05:00 08:00:00 09:00:00 10:00:00 11:00:30	2:09:00 13:00:00 14:00:00 15:00:00 16:	00:00 17:00:00 18:00:00	

ECU Identification Number (UID)	The ECU number that is assigned to your system.
Group View Name	Select the number for the "group" you want to view. Depending on the complexity of the panel/module layout, your installer may have designed your system with multiple groups.
Viewing Period	Module performance can be viewed daily, or over the last 30 day period.

Continued ...



Panels/Modules A graphic representation of how your array is laid out. The number in the center of each module represents the current power being generated by the panel (expressed as watts - DC). You can identify the inverter assignment of each panel by selecting (clicking on) the panel you want to identify.

A Note					
The power being generated by each panel will vary based on the amount of solar exposure.					
Query Date	You can select the date you want to view.				
Timeline Controller	The timeline controller turns ON and OFF the System Performance Timeline at the bottom of the page.				
Playback Speed	A slider control that allows you to determine the speed of the System Performance Timeline playback.				
System Performance	Graphic representation of the power being generated by the entire system during the current Timeline				
viewing period.					
Time Marker	Time indicator for timeline. Power is simultaneously displayed on the panels/modules. You can also drag the marker across the timeline to view a specific production time.				

					Enlarge View	Search But	ton
APsystems	DASHBOARD MODULE				NC	English   Settings 嘉兴 "Zhejiang,Cl	Sign our DS3 Jina Mainland
ECU: 216000065718 + DS3_dem	n_MKL 👻 Power in Dey(v	e) 🔻 👬 2023-03-2	5 F Time: 11:40:42	Play speed:		NC X Z	~ a
254         256         254         257           000293         000382         000395         00039           251         250         247         247           000293         000382         000305         00039	257 200363 248 2. 000363				Zoom In Butto	n zo	om Out Buttor
Panel information: Position: 1, 1 Orientation UID: 704000200293-1 Module Ty	r: vertical pe JC305M-24/Abs					Navigation diagram:	5
Inverter Type DS3 STC power	305 W 07	00:00 08:00:00 09:00:00	10:00:00 11:00:00	2-00:00 13:00:00 14:00	0:00 15:00:00 16:00:00 17:00:00 18:00:00		
					Navigation Wir	ndow	

Search Button	Fuzzy search for inverters by UID number or search for inverters by location
Zoom Out Button	Panels/Modules become larger.
Zoom In Button	Panels/Modules become smaller.
Navigation Window	For large systems, it is possible to quickly locate the corresponding panels/modules positions.
Enlarge View	Enlarge the whole view, hide the panel/module information, the timeline and the navigation window below.
NC	Inverter device without communication.

#### 2.3 View System Reports

Select the "REPORT" icon at the top of the page.





#### 2.3.1 Summary Report



Environmental Benefits	Represents environmental equivalent benefits.
Monthly Energy	Both graphic and table views of monthly production details for 12 month period
Production Details	
Yearly Energy Production	Graphic representation of yearly power production.
Download Icon	Download the reported data.
A Note	

The "Summary Report" of a system with a smart electricity meter installed, includes "Energy Usage" and "PV Summary". The "PV Summary" statistical report is the same as the "Summary Report" statistical report for users of pure photovoltaic systems. The statistics report on the "Energy Usage" page is shown in the figure below.



#### 2.3.2 System Data

ECU level data can be viewed.

- Select the "SYSTEM DATA" icon on the left side of the page,
- Select the "ECU DATA" icon,



#### Note

The "Energy Analysis" report of a system with a smart electricity meter installed, includes "Energy Analysis" and "PV Data". The "PV Data" statistical report is the same as the "ECU Data" statistical report for users of pure photovoltaic systems. The statistics report on the "Energy Analysis" page is shown in the figure below.

- Select the "SYSTEM DATA",
- Select the "ENERGY ANALYSIS",

Energy Analysis Icon					
APsystems		English i Šettings i Sign met Thejsong,China's Mainland			
SUMMARY REPORT	ENERGY ANALYSIS				
AND SYSTEM ANALYSIS SPERBY ANALYSIS BY DALK	BCV 21500 * Data Type Emergin Day * Data Type Emergin Day * Data				
A DOWNLOAD REPORT	Energy curve for 21500; in 2022-05-05 Unitation				

The Energy Analysis page is displayed.

EC	U Identification Numb	per		
APsystems		Data Reporting Period	Query Date	Englism   Settings   Sign out unjung,China's Mandaid
SUMMARY REPORT - System Amalysis Improy Amalysis	ENERGY ANALYSIS ECU 218000 + Detta Type	Renge in Data 📅 2022.05.0	5 Q. Dawny (P. Expert	
PULLATE SOWNLOAD REPORT (1)	Gain(Mh) 48 Production 28	Energy curve for 215	0000' in 2022-05-05	
	Commission 28 2001 0101 0201 040	ο στας σύος σύος αλος αίας σύος τρος τίσο	1205 1105 1401 1505 1605 1705	Talos Téos 2000, 2104 2206, 2506
	Produced 95.16 km	Comment 323,89 km	Experient O avec	mparter 228.73 km

#### 2.3.3 Download Report

Select the "DOWNLOAD REPORT" icon on the left side of the page.

Dowr	load Report Io	con		
APsystems				English ( Sentings ) Slipt out rejumg. Drivers (Maniand
W SUMMANY REPORT	ENERGY ANALYSIS			
A DOWINLOAD REPORT	ECU 235000	* Data Type Energy in Day	* Date 2007-05-05 Q Garry	(r) truen

#### The Download Report page is displayed

	ECU Ident	ification Numbe	r Da	ta Reporting Period					
APsystems	DASHBOARD MODULE				English   Settings   Sign out DS3D 霉兴 ,Shanghai,China's Mainland				
SUMMARY REPORT	DOWNLOAD REPORTS Note: This seport includes houry production data for the selected date.Please contact the (val area technical support if any quests.								
SYSTEM DATA ~									
	Data Type PV Data	* ECU ID 216	200037392 =	Type Hourly Energy in Day +					
	Date	2022-05-05 Q, Query	Export						
	Hour	1	Energy(kWh)						
	0		0						
	1		٥						
	2		Q						
	3	<u>\</u>	0						
	4	· \	0						
	5	· · · · ·	0.01						
	6	· · · · ·	0.22						
		· · · ·	1.15						
	./	\ \	1.53						
Data	Table	Query	Date						
ECU Identificatio Number (UID)	n	The ECU numb	er that is a	assigned to your system.					
Data Reporting Period		Pulldown for selecting reporting period and specific data type.							
Query Date		You can select	the date y	ou want to view.					
Data Table		Table view for	the select	ed reporting period and data	type.				

#### Note

The "Download Report" of a system with a smart electricity meter installed has one more "Energy Analysis" report than the pure photovoltaic system. The "Energy Analysis" page is shown in the figure below.

APsystems	DASHIDOARD		SETTING			English i Settings i Sign out China's Mainlan
SUMMARY REPORT -	DOWNLOAD RE	EPORTS				
SYSTEM ANALYSIS						
DOWNLOAD REPORT	Note: This report is	includes production data every 5 mi	nutes for the selected date.9	lease contact the local area technical o	upport if any quetts.	
	Data Type	Energy Analysis 👻	ECU 10 21508	· Type	Energy in Day	
	Date	2022-05-05	Q, Query	E Esport		
	Tes	Produced (Wh)		Consumed (Wh)	Exported (Wh)	Important (Wh)
	00:01			3.12	0	3.12
	00:06	0		0	0	0
	00:11	0.25		12.0	0	8.25
	00:16	8.		1.13		1.13
	00.33	117		4.17		A.75

Select the "Setting" Icon at the top of the page. ≻ Setting Icon 00 I Settings | Sign out MODULI APsystems <u>1h</u> SETTING System Time : 2023-03-28 10:13:07 5.99 3.54 coz(i) Normal 4.81 0 0 Ted SYSTEM INFORMATION

#### The Settings page is displayed.

	Functio	onality Tabs	
APsystems	AKSHBOARD MODULE	ALL SCALE	Datin ( Settings ) Sign out
C BYTHES  ACCOUNT SECURITY  ACCOUNT SECURTY  ACCOUNT ACCOUNTY  ACCOUNT ACCOUNTY ACCOUNTY ACCOUNTY ACC	PERCONLINE UPLOAD PICTURE	PERSONAL INFO We called the Account fully and System for is order to provide tactuated system.	I support and after table service to you. Account life means the account contentials. System life means the address of PV system, the basic configuration of PV address follows follows to basic to this system. The basic configuration of PV address follows follows to basic to the address to this system. The basic to basic to the address to this system. The basic to basic to the address to the address on system sectors are store means the address of the address. The basic to basic to the address of

#### 3.1 Setting

#### 3.1.1 Account Details

#### 1) Personal Info

Select the "Account Details" Icon on the left side of the page.

The "Personal Info" page is displayed.

APsystems	DASHEGARD MODULE		Dadim, i Seninge i Sign-om
ACCOUNT SECURITY ACCOUNT SECURITY HISTORY HELP	PERSONAL NEW	PERSONAL INFO We cellect the Account lefts and System lefts in order to provide technical support system. ACCOUNT INFO	and after sales service to you. Account lofs means the account credenticle. System lofs maam the address of PV system, the basic configuration of PV
VERSION HISTORY RESOURCE		Lógis Account - 1 do a in Interna Joint Annolescowe - Exercise or mark	Allow whithen to access to this system Dealerst thir function, areas one sharps this systems an some versation strongen versionale and the standard and system strandard and the standard and the Discourse minimum party of the standard installing at a share
41		name	Dataset wird Ausstein, ISMA Lansson answijke find aussilling dates af bink spanne, ib obser som answijke ("Estand Mahamanama") All die all Aussensen in Gener Mara Aussensinen Sensines Mannious and Macharine Mann
		Juga com Consect Proces - Optimul	Takih tak fordina. Aprymene will and new possistions, review, newtrings and maketing some is your much impaktive

Edit any of your personal information (except for your Username). Contact your installer if you need your username changed.

#### 2) Upload Picture



The Upload Picture page is displayed.

Continued ...

	System	n Picture
APsystems	DASHBOARD MODULE	English / Settings / Sign out open 2317M6 eig
SETING     ACCOUNT SECURITY     ACCOUNT SECURITY     HISTORY     VERSION HISTORY     RESOURCE     (3)	PERSONAL INFO	UPLOAD PICTURE Test the strates and densing pictures of VP systems: STETE PICTURE Restore systems pictures. Users can view, add, edd, and delses these pictures. Format: prg. jpg. Siz: 6-104. DEWING PICTURE Restore strates pictures: users not wiew, add, edd addres these pictures. Format: prg. jpg. Jpd. Siz: 6-104. DEWING PICTURE Restore strates pictures: users not wiew, add, edd addres these pictures. Format: prg. jpg. Jpd. Siz: 6-104.
System Picture		Upload system photos. And the photos will be displayed on the dashboard.
Drawing Pictur	e	Upload design drawings for the system. And the uploaded drawings are

displayed on the module page.

#### 3.1.2 Account Security

#### 1) Reset Password

Select the "Account Security" Icon on the left side of the page.

The "Reset Password" page is displayed.

		Rese	et Password	
•	APsystems	DASHBOARD MOTULE		English   Settings   Sign out sissiapptest NOAKE 题兴.Zhejiang.China's Mainland
• i +	SETTING - ACCOUNT DETAILS ACCOUNT SECUNITY HISTORY ~ NELP VERSION HISTORY RESOURCE (C)	RESET PASSWORD	Reset Password End user can reset EMA login password through the reset password contact email sent from APsystems.  EDIT PASSWORD Password Confirm Password Submit	

#### 2) Account Cancellation

Select the "Account Cancellation" Icon on the left side of the page.

The "Account Cancellation" page is displayed. Account Cancellation

0)) ? i +	SETTING ACCOUNT DETAILS ACCOUNT DETAILS ACCOUNT SECURTY HISTORY HELP VERSION HISTORY RESOURCE	S .	DASHEDARD MODULE RESET PASSWORD ACCOUNT CANCELLATION	English       I Settling I Sign out         Statistication Network       III // Zheijkang, China's Maintand
	÷			Subarri

#### 3.2 History

#### 3.2.1 ECU History

Select the "ECU History" Icon on the left side of the page.

	ECU Hist	ory
6	APsystems	DASHEDAND MODELY REPORT SETTING
0	RASIC INFORMATION INVERTIGATION PRAVENCE	UPLOAD PICTURE Collect the system picture and desering picture of PV system.
8	HISTORY *	SYSTEM PICTURE
	ECU HIETONY INVERTER HISTORY	Register system pictures. Users can view, add, edd, and delete these pictures. Format: pog. jpg. Size: 0-1064.
?	HELP	- FR
i	VERSION HISTORY	
Ŧ	RESOURCE	DRAWING PICTURE

The ECU History page is displayed.

				17		ECU Mainte	nance History	English   Settings   Sign out	
	APsystems	DASHBOARD MODULE		NEPONT SETTING				the second se	
٥	SETTINGS	FCU Hi	story						
	HISTORY	Loom	story						
	ECU HINTORY	The ECU list iti removed or rep	oplays the contorner's laced. Select each E	a use records. The	e Create Data or the Replace D stmence data	beta is the one you register or modify this CU for y	our contonner in EMA software. You can diaplay total everyy p	produced by the ECU over its lifetime, and whether the unit has been	
	INVERTER HISTORY								
2	HELP	ECU HISTO	RY LIST			1			
ŝ	VERSION HISTORY		FOU D		Creare Date	Banlara Data	Lifering FreenulkWhi	Disambase	
4	RESOURCE	-			and the second s		and an an an and a start of the		
	201					No Reco	rdo Found		

#### 3.2.2 Inverter History

Select the "Inverter History" Icon on the left side of the page.

ŝ	APsystem	IS	DASHBOARD	MODULE				English ( Settings ) Sign out
0	SETTINGS	÷	FCU Hi	story				
	HISTORY	-	LOOTIN	story				
	ICU HISTORY INVERTER HISTORY		The ECU list sin removed or rep	splays the customer's w lacad. Select each ECU	se records. The Create Data of the Replace D ID to see performance data.	ete in the one you register or mobily this ECU for	your customer in EMA antiware. You can display solal energy prod	used by the ECU over its lifetime, and whether the unit has been
?	HELP		ECU HISTO	RY LIST				
÷	VERSION HISTORY		ID	ECU ID	Cruene Dans	Replace Date	Lifetine Durgy(kWb)	Directions
*	RESOURCE					Na Rec	orda Fealind	

The Inverter History page is displayed.

							Ir	nverter Maintenance	History
ę	APsystems	DASHE	DARD	MODULE	REPORT				English i Settings i Sign out Sissi NOAKE Paris Auvergne-Rhône-Alpes, France
0	SETTINGS	Inv	ortor	History					
•	HISTORY	The low	erter list di	splays the custom	er's use record.	The Create Date or the Rep	lace Date is the one you register	r or modify this inverter for your customer in EMA software, Click (	on the Inverter id, you could get more details of this Inverter.
	ECU HISTORY	INNER		TOBYLIST					
?	HELP	INVE	I EN HIS	STURT LIST	-				
i	VERSION HISTORY	Inver	ter ID			Q, Query		+	
*	RESOURCE	ID		Inverter	ID		Create Date	Replace Date	Directions
	(S)							No Records Found	

#### 3.3 Help

Select the "Help" Icon on the left side of the page.

The Help page is displayed.

	Help	
APsystems		English i Settings i Sign-we
© SETTINGS E HISTORY 7 MILE	FAQ Get come bebge	
1 VERSION HISTORY 2 RESOURCE	1. How do I change my personal information?     1. Ease EMA.     2. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. Change your personal information.     3. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. Change your personal information.     3. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. Change your personal information.     4. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. You're not able to save the motified information.     4. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page, you'l find the "Hoolty Password" feats.     3. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page, you'l find the "Hoolty Password" feats.     3. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page, you'l find the "Hoolty Password" feats.     4. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page, you'l find the "Hoolty Password" feats.     4. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. You'l Find the "Hoolty Password" feats.     4. Cick "MANAGEMENT" or "Semings" at the upper right comer of your EMA page. You'l find the "Hoolty Password" feats.     4. Cick "Manage" can page to you and a confirmed password is the "Modify Password" feats.     4. Cick "Management page reading address is facer to a you will necicie your nee password via email.	
	3.Where can I get my installer's contact information? Ther histaller's contact information is located at the lower right comme of each page of your 3MA. If you have any questions, please contact your installer. 4.Where can I get an immediate indication of my system's status? EMA could monitor your system by internet. Your system's using is indicated on the top of each page of your EMA. So indicates your system is operating and reporting as expected.	

#### 3.4 Version History

Select the "Version History" Icon on the left side of the page.

The Version History page is displayed.

Version History		rsion History		
6	APsystems		English i Settings i Sign wat	
• • •	SETTINGS HISTORY HELP	Version History Users can per some banks version information.		
3	VINCEN INCOM	VERSION HISTORY LIST		
4	RESOURCE	V5.2.1 (Lareet)	2021-06;34	

#### 3.5 Resource

Select the "Resource" Icon on the left side of the page.

The Resource page is displayed.

Continued ...

