

ABAT100 Series Battery Management System

Installation and Operation Instruction V1.1

Acrel Co.,LTD

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Declaration

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1 Summary

This product is used for centralized display and management of data and alarms of battery.

2 Networking Architecture

Solution 1: Touch Screen Serial Port Networking Solution

Upload to third-party platforms

HS module



ABAT100-HS:manage one set of batteries at a time, with a maximum of 120 batteries per set.

ABAT100-S-02/6/12:monitor a 2/612 battery,monitor battery voltage,internal resistance,and negative electrode temperature.

ABAT100-C:monitor a charging and discharging current and an ambient temperature, with a maximum current range of 1000A.

Fig1 Networking solution 1

S module

C module

UPS



Solution 2: EMS, EIOT Networking Solution

ABAT100-HS:Manage one set of batteries at a time.

ABAT100-S-02/6/12: Monitor a battery, monitor battery voltage, internal resistance, and negative electrode temperature.

ABAT100-C:Monitor a charging and discharging current and an ambient temperature.

Fig2 Networking solution 2

3 Installation of Touch Screen

3.1 appearance and installation

3.1.1 7-inch touch screen appearance and installation



Fig3 7-inch touch screen installation

3.1.2 10-inch touch screen appearance and installation



Fig4 10-inch touch screen installation

3.2 Touch Screen Interface Description



erial port(DB9)	2×RS485
USB1	Main port, compatible with USB2.0 standard
LAN (RJ45)	Ethernet interface
Power connector	24V DC ±20%

Fig5 Touch screen interface description

DB9 Definition

Serial port pin definition

6		
-1	12345	-
(AN)	00000 // //	A
(III)	0000	M
Contraction of the second seco	6789//	9
1		

Serial port pin definition

interface	PIN	pin definition
	2	RS232 RXD
COM1	3	RS232 TXD
	5	GND
COMO	7	RS485 +
COMZ	8	RS485 -
00112	4	RS485 +
COM3 -	9	RS485 -

Fig6 Serial port pin definition diagram



Fig7 Supporting adapter board for touch screen

Communicate by serial port as shown above: 7,8 To gateway **3.3 Installation**



Fig8 Installation diagram of touch screen

3.4 Wiring

Step 1: Strip the 24V power cord and insert it into the power plug terminal Step 2: Use a flat-blade screwdriver to tighten the power plug screws Step 3: Insert the power plug into the power socket of the product

schematic diagram and pin definition of the power plug are as follows





4 Touch Screen Instructions



Fig10 Instructions for using touch screen software

4.1 Homepage

Data query	Alarm managem	ent llser m	anagement S	attings	Help
butu quory	ATT AT IN INATTAS CINC			occurigo	lietp
Number of batter	y pack alarms				
	Bati			Battery4	
(0)	Bati	tery2 0		Battery5	
\sim	Bati				
	Bat				
DataList	Bat				
DataList Battery pack name	Bat Group Voltage(V)	tery3 0 Current (A)	Charge/Discharge	SOC (%)	SOH (%)
DataList Battery pack name Battery1	Bat Group Voltage(V) 0.0	tery3 0 Current (A) 0.0	Charge/Discharge Floating	SOC (%) 0. 0	SOH (%) 0.0
DataList Battery pack name Battery1 Battery2	Bat Group Voltage(V) 0.0 0.0	tery3 0 Current (A) 0.0 0.0	Charge/Discharge Floating Floating	SOC (%) 0. 0 0. 0	SOH (%) 0.0 0.0
DataList Battery pack name Battery1 Battery2 Battery3	Bat Group Voltage(V) 0.0 0.0	tery3 0 Current (A) 0.0 0.0 0.0	Charge/Discharge Floating Floating Floating	SOC (%) 0.0 0.0	SOH (%) 0.0 0.0

The first page as shown. Display battery String general survey and alarm number.

4.2 Data Query-Battery String Data General Survey

Display group voltage, current, charge status, SOC, SOH and other data of battery String.

	🕤 Data que	ery	3	2023-03-08 14.22.48	송 J»	$\widehat{\omega}$	
	DataList	Group Voltage	SOC				
	Battery pack name	Group Voltage(V)	Current (A)	Charge/Discharge	SOC (%)	SOH (%)	
BatteryPack				Floating			
A11	Battery2			Floating			
Battery1				Floating			
				Floating			
Battery2				Floating			
Battery3							
Battery4							
Battery5							

4.3 Data Query-Battery String Group Voltage General Survey

Display group voltage by histogram.

	🕤 Data d	query			<⊉	⊲»	$\widehat{\omega}$		
	DataList	Grou	p Voltage	SOC					
BatteryPack									
ALL									
Battery1									
Batterv2									
	1200V								
Battery3									
Battery4									
Battery5		50.0	40.0						
		50.0	40.0	0.0	0.0	0.0			
			Battery2						

4.4 Data Query-Battery String SOC General Survey

Display SOC by histogram.



4.5 Data Query-Total Data of Cell Battery

Display voltage, temperature, resistance, SOC, of Cell battery String.

	🕤 Data query			(아 (아 (아
	Total data MonomerDataList	Yoltage Re	sistance Temperature	
BatteryPack		Highest Tem	p. 📕 Highest U	Highest R
ALL		maximum 0.0 Battery 0	0°C maximum 0.000V 0 Battery 0	maximum ΟυΩ Battery Ο
Batteryl		Lowest Temp	. Lowest U	Lowest R
Battery2		minimum 0.(0°C minimum 0.000V	minimum OuQ
Battery3		Battery (0 Battery O	
Battery4		I U/I	Ambient Temp.	Monomer U
Battery5		Voltage 50. Current 0.0	OV Temp1 0.0°C D0A Temp2 0.0°C	Deviation 0.000V Extreme 0.000V
		soc	SOH	
		SOC 10	0% SOH 0%	

4.6 Data Query-Monomer Data List

Display battery name, alarm status, voltage, temperature, resistance, SOC, SOH of each battery in each String. Each battery String can have 120 batteries data at most.

	🕤 Data qu	Jery			<ි>	⊲»	$\widehat{\mathbf{w}}$		
admin	Total data	MonomerDatal	ist Volta	nge Resist	ance Temper	ature			
	Battery name	Alarm status	Voltage (V)	Temperature(°C)	Resistance (u Ω)	SOC (%)		SOH (%)	
BatteryPack									
Battery2									
Battery3									
Battery4									
Battery5									
			3	1 / 12					

4.7 Data Query-Histogram of Cell Battery Voltage, Resistance and Temperature Display each battery data by histogram. Minimum in blue, Maximum in red.

		🕤 Data query							2023-03-08 16:27:44				» 값	
负责人		Tota	l data	Monomeri	DataList	Voltag	e	Resistanc	e Te	mperature				
BatteryPack	t	Low		0. 000				Highes	t U (). 000 Bat				
Battery2		12V												
Battery3														
Battery4														
Battery5			0. 000	0. 000	0. 000	0. 000	0. 000	0.000	0. 000	0. 000	0. 000	0.000		
		listog	001 ram	002 Diag	003 (ram	004		10	007 Upd	008 late time:	009 2000/00.	010 /00 00:0	¢	

	🕤 Da	ta qu	iery		2023-03-	-08 16:28:12	\ [2]	<∖ĵ»	$\widehat{\mathbf{w}}$			
负责人	Total	data	Monomer	DataList	Yoltag	•	Resistance	Tem	perature			
BatteryPack	Lowe					l	Highest R					
A11												
Battery1												
Battery2	24000uΩ											
Battery3	18000u Q											
Battery4	12000u Q 6000u Q											
Battery5												
	Histog	ram	Dia	gram	<		10 📎	Upda	ite time:	2000/00	/00 00:00	

	🕤 Da	ta qu	iery					2023	- <mark>03-08</mark> 16:28:3	· 💮	۲»	$\hat{\omega}$
负责人	Tota	l data	Monomeri	DataList	Voltage		Resistan	ce	femperaturo			
BatteryPack	Lowes	t Temp.	0. 0			I		Temp.	0.00 Ba			
ALL												
Battery1	50°C											
Battery2	40'C											
Battery3	30°C											
Battery4	20'C											
Batteru5	10"C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Dattoryo		0.0	0.0	0.0	0.0	0.0	006	0.0	008	0.0	010	
					004							
	Histog	ram			$\langle \rangle$		10 🔊	U	pdate time	: 2000/00	/00 00:00	

4.8 Data Query-Diagram of Cell Battery Voltage, Resistance and Temperature

Display diagram of each battery. 10 Batteries in each page at most. Get data in brief by point at screen.



4.9 Alarm Query-Current Alarm

	Current al	ar a Histor	rical alarm Event ri	ecord	2023-08 16:40:44)
	Date	Time	Object name	Alarm value	Alarm description	^
itteryPack			ALMCJQCOMSTATUS_005			
			ALMCJQCOMSTATUS_004			
			ALMCJQCOMSTATUS_003			
satteryi			ALMCJQCOMSTATUS_002			
Battery2			ALMCJQCOMSTATUS_001			
attery3						
Battery4						
Battery5						

4.10 Alarm Query-Historical Alarm

Attention: Only login user "admin" can clear alarm successfully.

	∽ Alarm m	anagem	ent	2023-03-08 16:54:56	☆ 	$\widehat{\mathbf{w}}$
	Current alarm	Historical	l alara Event record			
BatteryPack	Date	Time	Object name	Alarm description		^
ATT						
						~
				Clear alarm	Export /	Alarms

4.11 Alarm Query-Event Record

Attention: Only login user "admin" can clear events successfully.

	S Ev	ent record			2023-03-09 09 38 48	<ි}	⊲ »	6
edmin	Curren	t alarm Historical	alara Event rec	ord				
BatteryPack	Num	Trigger time	User name	Window name	Оре	ration		^
ALI								
								~
	<						>	
					Clear Events	Ex	port E	vents

4.12 User Management

Data query	Alarm management	User management	Settings	Help
Number of batter	y pack_alarms			
	🕤 User mana	gement		
		Gurrent upor:		
	user rugi			
DataList				
Battery pack name	Group			SOH (%)
		×		
		Floating		
		Floating		
r password:				

Admin password: 10000. Allowed to "Settings" and setup.

4.13 Parameter Settings-System Settings

Set the number of batteries, voltage, battery String name, capacity of battery String, internal resistance test of each battery String.

Set the data in the collector pointed.

Press "Save settings" to save the change.

	\bigcirc Settings	2023-03-15 16:51:53	ලි ර	J» ŵ
admin	Number of batteries		0	
System Set.	Battery voltage (12V, 6V, 2V)		0	
Battery1		E	lattery1	$\mathbf{\Sigma}$
Battery2			0	
Battery3	Scorla battary owner 1		Toot	
Battery4	Single ballery humber		Test	
Battery5		Indi	vidual test	
Batteryó	Charge and discharge state	Every	0 Day	
Alarm Set.				
Communication			C. C	
Other Set.	Read set	Lings Sav	e settings	

4.14 Parameter Settings-Alarm Settings

	🕤 Settings			公 <1»	$\widehat{\mathbf{W}}$
\sim	Parameter name	Alarm value	Parameter name	Alarm value	
	Single U overcharge (V)	0.000	Overcurrent charging (A)	0.0	
System Set.	Single U over-discharge (V)	0.000	Discharge overcurrent (A)	0.0	
Alarm Set	Single over floating charge(V)	0.000	Ambient high temperature (°C)	0. 0	
	Single under floating charge(V)	0.000	Ambient low temperature (°C)	0.0	
		0.000	Battery over temperature ("C)	0.0	
Battery2		0.000	Battery low temperature ('C)	0.0	
Battery3	Overall voltage overcharge (V)	0.0	Uneven battery temperature ("C)	0.0	
Batterv4	Overall U over-discharge (V)	0.0	Internal resistance early warning(%)	0	
	Overall over floating charge(V)	0.0	Over internal resistance alarm(%)	0	
Battery5	Overall under floating charge(V)	0.0	Inhomogeneous of Resistance (%)	0	
Battery6		0	Under internal resistance(%)	0	
Communication		0			
Other Set.	Initialization Calculate	alarm value by m	onomer value Read settings	Save set	tings

The parameters in this page is read from communication collector directly. Set these parameters should transport into communication collector.

Set alarm limits value of Cell voltage overcharge, over-discharge, over floating charge, under floating charge and uneven individual voltage.

Set alarm limits value of group voltage overcharge, over-discharge, over floating charge and under floating charge.

Set alarm limits value of current overcharge and over-discharge.

Set alarm limits value of environmental over temperature, under temperature and temperature rise.

Set alarm limits value of battery over temperature, under temperature and uneven temperature.

Set alarm limits value of over ,under and uneven internal resistance.

Set alarm limits value of battery String insulation resistance.

Set lower alarm limits value of SOC and SOH.

	∽ Communication		2023-05-25 09:35:	¹⁴ 谷 ()"	\bigcirc
	Acquisition mode		E	IS ¥	
System Set.	IP address 192	168	2	100	
Alarm Set.	Number of collectors		ſ	5	
Communication	Set meter address			1	
otner set.			Read ADD.	0	
	HMI Address			0	
				Save settings	

4.15 Parameter Settings-Communication Settings

Available acquisition mode: Serial port acquisition mode, EMS acquisition mode and EIOT acquisition mode. Serial port acquisition mode: Touch screen collect data from ABAT100-HS by RS485.

EMS acquisition mode: An assorted EMS solution is provided. The data of ABAT100-HS collector use ANET gateway serial port to collect and transport by network port2 to the touch screen.

EIOT acquisition mode : An assorted EITO solution is provided. The data of ABAT100-HS collector use AWT200-1E4S gateway serial port to collect and transport by network port to the touch screen.

Set IP address: The IP address is belong to the touch screen.

Number of collectors: Set the number of ABAT100-HS collectors.

Set meter address: The ABAT100-HS collectors address only can be set when connect with Cell ABAT100-HS collector. The 1~6 address on the touch screen is corresponding to the battery String 1~6.After setting, click on the read address to confirm whether the write was successful.

Set 485 forwarding address:modify this address when using 485 forwarding data processing on the touch screen.

4.16 Parameter Settings-Other Settings

	∽ Settings	2023-03-15 16:52:22 🐼 🕄 🕅 🏠
admin	Battery equalization	
System Set.		
Alarm Set.	0 complete	Monomer equilibrium
Communication		30 14
Other Set.	Set internal resistance reference value	
Battery1	Set all inputs 61680 Set Average Input 257	0 >
Battery2	oet single input bartery number (1 120)	
Battery3	Modify current direction Set	Clearl
Battery4	Device reset: 61680: HS module restart 61696: S module restart 0xf1xx, the first restart of group 1	Set
Battery5	Low power consumption mode open	Cancel
Battery6		

Set battery equalization, internal resistance reference value, current direction, device reset and low power consumption mode.

Battery equalization: Balance the voltage of Cell battery not to high or to low.

Internal resistance reference value: Set after replace the batteries.

Change current direction: Set when the Haul connected in opposite direction.

Device reset: Reset to test Cell battery HS Module.

Low power consumption mode: If the battery will not be charged in a long time, can open this mode to make HS low power consumption.

Clear I: Clear current to calibrate HALL sensor. Only can be pressed with no load.

Manual revision record

Data	Old version	New version	Revision
2023.3.17		V1.0	1. First writing
2023.5.24	V1.0	V1.1	2. Update images and descriptions of 4.1and 4.15

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