



Solis Smart Control V1.0

Trial-run Stage Supports:

S5-EH1P(3-6)K-L

S6-EH3P(3-10)K-H

Ginlong Technologies Co., Ltd.

3/15/2025



01 For End User
Via Soliscloud

02 For Developer
Via Modbus

03 For Developer
Via Soliscloud API

CONTENTS



01

**For End User
Via Soliscloud**



Enable Solis Smart Control Function



For plants with permission to use this Solis Smart Control function, please check the “plant overview” page and click the setting button on the top right corner of the system flow diagram

The screenshot displays the Solis Smart Control interface for a plant named "德国_分时" (Germany Time-of-Use) with ID 10E932. The interface includes a sidebar with navigation options like Overview, Layout, Info, Device, Alarm, Warning, and more. The main area shows a system flow diagram with four components: PV (1.037kW), Grid (0.493kW), Battery (1.292kW), and Consumed (0.984kW). A red arrow points to a setting button (gear icon) in the top right corner of the flow diagram. Below the flow diagram, there are tabs for Operating Data, TOU Tariff, and Energy Management. The Operating Data tab shows a summary of daily PV to Consumption (3kWh, 100%) and PV to Grid (0kWh, 0%). A table below provides detailed daily metrics: Daily Yield (3kWh), Daily Imported (0.84kWh), Daily Charged (4kWh), and Daily Discharged (0kWh). The bottom of the page shows "Daily Earning: 3DEM" and "Today Full Load Hours: 0.6h". On the right side, there are weather and plant information panels for "München".

System Flow Diagram Data:

- PV:** Today Yield: 3kWh ≈ 3DEM, 1.037kW
- Grid:** Today Imported: 0.84kWh, Today Exported: 0kWh ≈ 0DEM, 0.493kW
- Battery:** Today Charged: 4kWh, Today Discharged: 0kWh, 1.292kW
- Consumed:** Today Consumed: 0kWh, 0.984kW

Operating Data Summary:

- Daily PV to Consumption: 3kWh (100%)
- Daily PV to Grid: 0kWh (0%)

Detailed Daily Metrics:

Daily Yield	3kWh	Daily Charged	4kWh
Daily Imported	0.84kWh	Daily Discharged	0kWh

Plant Information:

- State: Online
- Plant Name: 德国_分时
- Capacity: 5kWh
- Owner: --
- Plant Address: GermanyBavariaMünchen2222 >

Enable Solis Smart Control Function



After enabling the “Remote Scheduling” button, users have 3 options to apply the smart control logic

A screenshot of a web interface titled "Set" with a close button (X) in the top right corner. The interface shows a "Remote Scheduling" toggle switch that is turned on. Below it, there is a section for "EMS" with three options: "Solis AI" (radio button), "Peak-Valley Arbitrage" (radio button, highlighted with an orange border), and "Timed Plans" (radio button). Each option has a brief description of its function.

Set

Remote Scheduling

* EMS

Solis AI
Let Solis AI help you decide the best power supply strategy.
Note: For the first time, it takes 1~3 hours to generate the energy management plan.

Peak-Valley Arbitrage
Intelligently control the charging and discharging of devices according to the tariff in your region.

Timed Plans
Allow equipment to execute according to the timed plan

- **Solis AI**
 - **Only available for the plants with day-ahead electricity price data**
 - Soliscloud will utilize the AI strategy to automatically control the hybrid inverter to charge/discharge according to dynamic electricity price data obtained from 3rd party API interface such as Nordpool, Octopus, etc
- **Peak-Valley Arbitrage**
 - **Only available for the plants with day-ahead electricity price data**
 - Users can define the charging/discharging price threshold among with other system limits to develop a suitable control logic to maximize the benefits from dynamic electricity price data.
- **Timed Plans**
 - Users can define a sets of flexible control logics based on different time periods

Set

Remote Scheduling

* EMS

Solis AI

Let Solis AI help you decide the best power supply strategy.
Note: For the first time, it takes 1~3 hours to generate the energy management plan.

Peak-Valley Arbitrage

Intelligently control the charging and discharging of devices according to the tariff in your region.

Timed Plans

Allow equipment to execute according to the timed plan

Parameter Settings

* Tariff Area

GER

The Solis AI logic will analyze the system's generation and consumption behavior and cooperate with plant area's local weather condition, to calculate suitable charging price and discharging price thresholds.

Then Soliscloud will control the hybrid inverters automatically to charge/discharge when necessary in order to provide a balanced control between maximizing the yield and providing a stable power supply.

Note: Solis AI logic will keep updated without change notice. If the Solis AI logic is not optimal for users' system, please consider to use "Peak-Valley Arbitrage" function to develop customized logic

Peak-Valley Arbitrage



Remote Scheduling

* EMS

Solis AI
 Let Solis AI help you decide the best power supply strategy.
 Note: For the first time, it takes 1~3 hours to generate the energy management plan.

Peak-Valley Arbitrage
 Intelligently control the charging and discharging of devices according to the tariff in your region.

Timed Plans
 Allow equipment to execute according to the timed plan

Parameter Settings

* Tariff Area
 GER

* Charging Electricity Price Threshold
 87 EUR/MWh

* Discharging Electricity Price Threshold
 110 EUR/MWh

System feeder limit

System withdrawal limit

System charge and discharge limit

Charging Power
 1000 W

Discharge Power
 1000 W

Battery SOC

Charging Depth
 100 %

Discharge Depth
 10 %

Cancel OK

Setting		Description
Tariff Area		Select the country/region based on the plant location. This will allow Soliscloud to grab the correct electricity price data from 3 rd party API interface
Charging Electricity Price Threshold		Define when to charge the battery. Once electricity price is lower than the threshold, battery will charge
Discharging Electricity Price Threshold		Define when to discharge the battery. Once electricity price is higher than the threshold, battery will discharge
System Feeder Limit	Value	For systems with a certain export limit threshold, please click the button to enable limit setting and set the limit value to the export limit required for the system. For systems without export limit, please keep the button OFF
System Withdrawal Limit	Value	For systems with a certain import limit threshold, please click the button to enable limit setting and set the limit value to the import limit required for the system. For systems without import limit, please keep the button OFF
System Charge and Discharge Limit	Charging Power	If users want to set a certain charge power when charge action is activated, please click the button to enable the setting and set the charge power needed. If the button is OFF, battery will charge at its max capability when charge action is activated.
	Discharging Power	If users want to set a certain discharge power when discharge action is activated, please click the button to enable the setting and set the discharge power needed. If the button is OFF, battery will discharge at its max capability when discharge action is activated.
Battery SOC	Charging Depth	If users want to set a certain battery SOC limit when charge action is activated, please click the button to enable the setting and set the charge SOC needed. If the button is OFF, battery will charge till 100% SOC when charge action is activated.
	Discharge Depth	If users want to set a certain battery SOC limit when discharge action is activated, please click the button to enable the setting and set the battery SOC limit needed. If the button is OFF, battery will discharge till overdischargeSOC setting (Default 20%) when discharge action is activated.

Timed Plan



Set
✕

Remote Scheduling

*** EMS**

Solis AI

Let Solis AI help you decide the best power supply strategy.
Note: For the first time, it takes 1~3 hours to generate the energy management plan.

Peak-Valley Arbitrage

Intelligently control the charging and discharging of devices according to the tariff in your region.

Timed Plans

Allow equipment to execute according to the timed plan

Parameter Settings

System feeder limit

System withdrawal limit

Edit Plan

Cancel

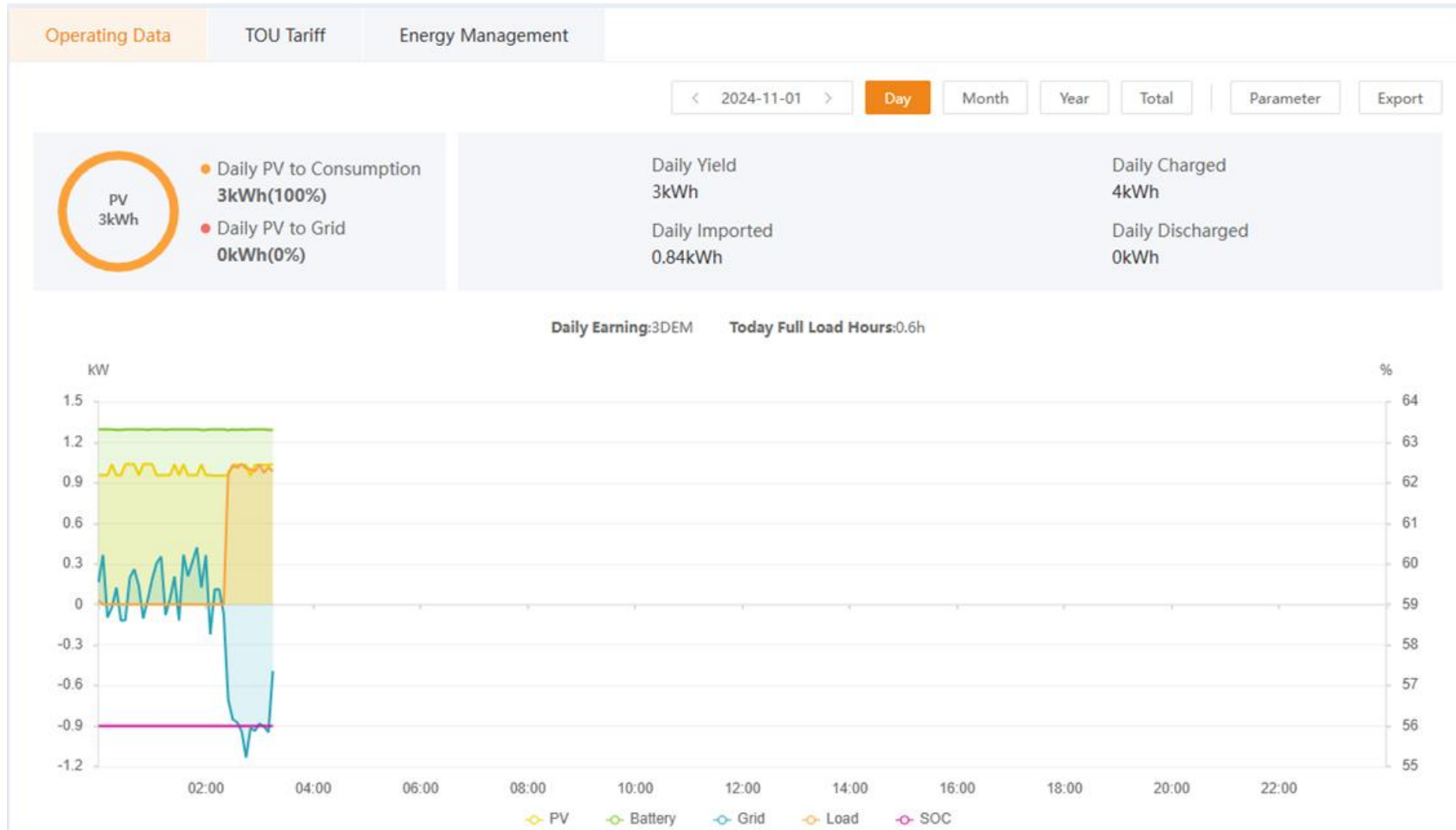
OK

Start Time	End Time	Action	Charge and Disc...	Allow grid to ch...	PV Switch	DO Control	SOC	Operation
00:00	23:30	Discharge	2000 W	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20 %	Delete

Cancel OK

Setting	Description
System Feeder Limit	Value For systems with a certain export limit threshold, please click the button to enable limit setting and set the limit value to the export limit required for the system. For systems without export limit, please keep the button OFF
System Withdrawal Limit	Value For systems with a certain import limit threshold, please click the button to enable limit setting and set the limit value to the import limit required for the system. For systems without import limit, please keep the button OFF
Timed Plans	Start Time – End Time Define the time period the control logic applies (Up to 6 time periods can be set)
	Action Charge/Discharge/Standby Standby indicates battery remain idle and not charge or discharge
	Charge and Discharge Limit Define how much power the battery should charge or discharge
	Allow grid to charge battery Define if battery can be charged from grid power
	PV Switch To stop the PV generation (suggest to use in negative price time period)
	DO Control (Only available for models with DO port) DO control to provide ON/OFF signal to turn on off external loads
	SOC Define the target SOC, charge till XX% or discharge till XX%

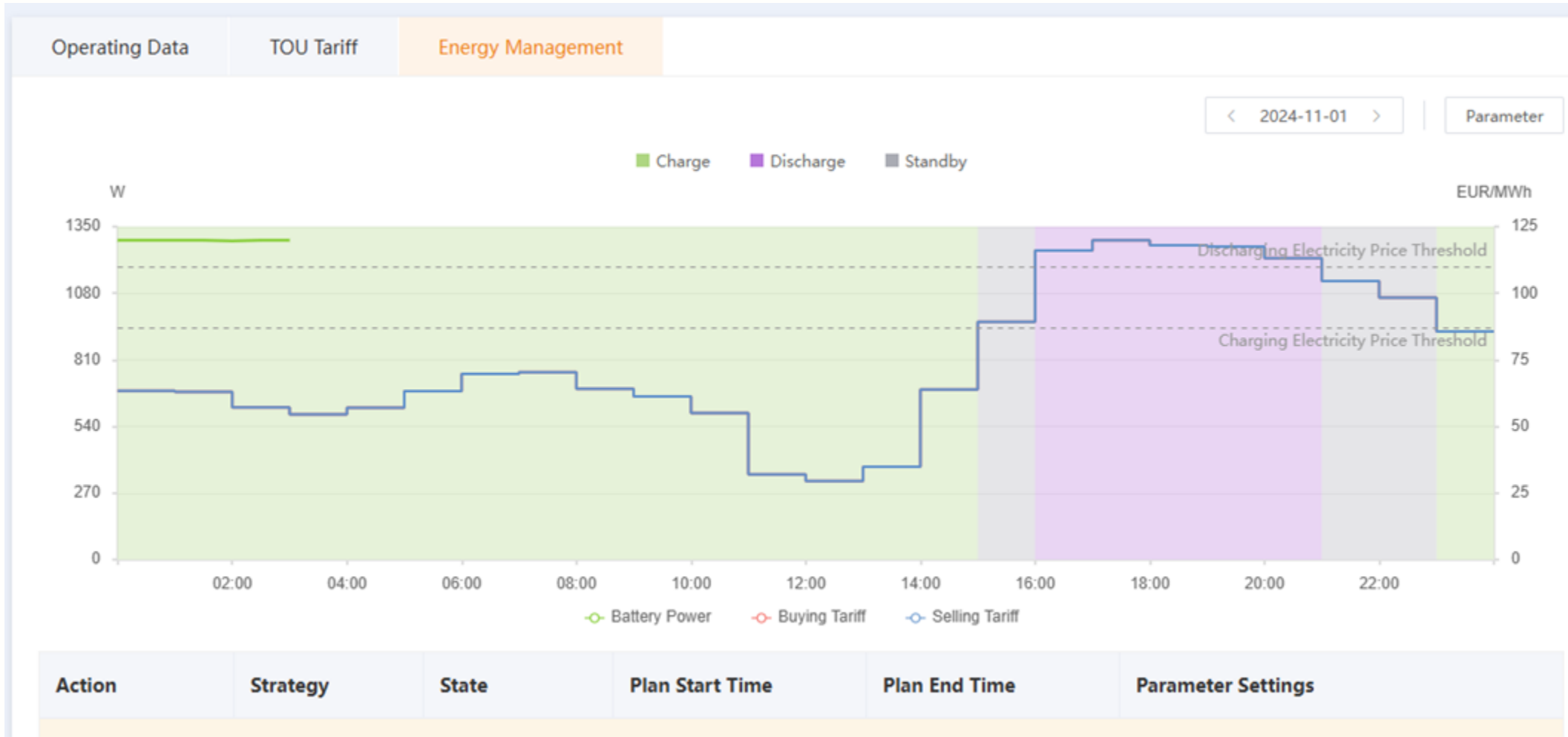
Plant Overview – Operating Data



Plant Overview – TOU Tariff



Plant Overview – Energy Management



Hybrid inverter Model and Firmware Requirements

Currently only the following hybrid models with latest firmware version can support the Solis Smart Control

- S5-EH1P(3-6)K-L (ARM: V4C-63 , DSP: V50B02)
- S6-EH3P(3-10)K-H (ARM: V12-05, DSP: V06B05D01)

Only support 1 inverter per system (Parallel system not supported yet)

More models will be supported after official release.

Soliscloud Account Permission

Currently, the permission can only open to users who are interested in joining the test program.

Please contact Solis local sales rep or technical support team, provide the Soliscloud account info and the specific plant ID to activate the function.

02

For Developer Via Modbus

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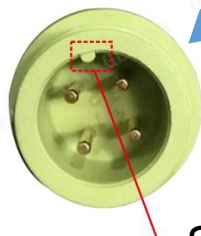
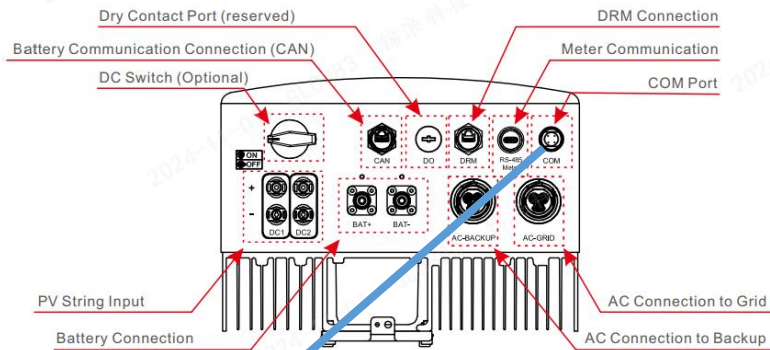


Hybrid inverter Model and Firmware Requirements

Currently only the following hybrid models with latest firmware version can support the Solis Smart Control

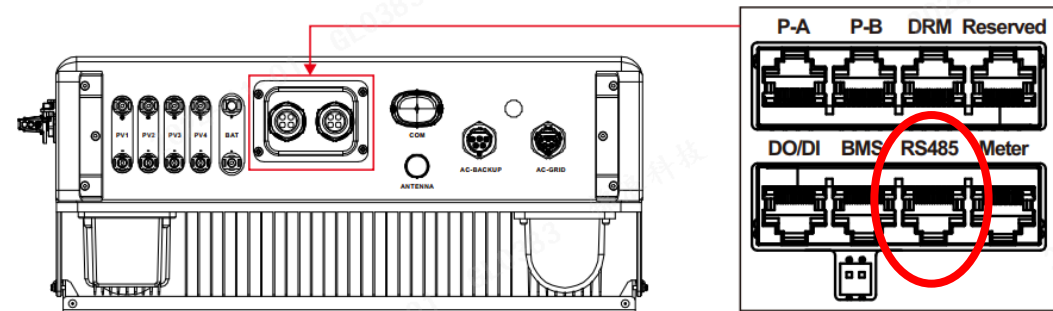
- S5-EH1P(3-6)K-L (ARM: V4C-63 , DSP: V50B02)
- S6-EH3P(3-10)K-H (ARM: V12-05, DSP: V06B05D01)

Only support 1 inverter per system (Parallel system not supported yet)
 More models will be supported after official release.

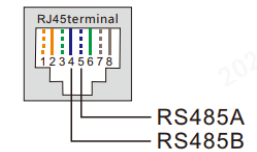


- 1: +5V
- 2: GND
- 3: RS485A
- 4: RS485B

S5-EH1P(3-6)K-L



NOTE:
 Pin definition of the RS485 Port is following EIA/TIA 568B.
 RS485A on Pin 5: Blue/White
 RS485B on Pin 4: Blue



S6-EH3P(3-10)K-H

Modbus RTU protocol Content – Input Registers



---Baud Rate: 9600bps
---Odd-even check: None
---Data Bits: 8
---Stop Bit: 1

Read Time Interval >300ms
Write Time Interval > 700ms

Inverting Power: 33079

PV Power: 33057-33058

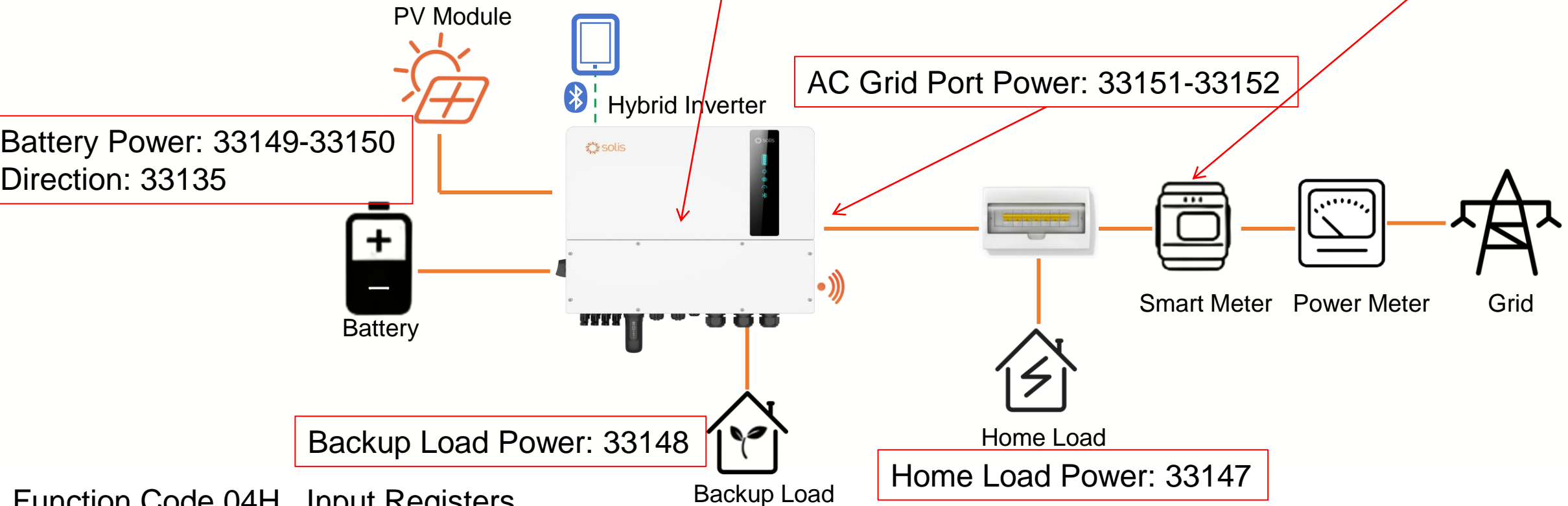
Meter A Power: 33257-33258
Meter B Power: 33259-33260
Meter C Power: 33261-33262
Meter Sum Power: 33263-33264

Battery Power: 33149-33150
Direction: 33135

AC Grid Port Power: 33151-33152

Backup Load Power: 33148

Home Load Power: 33147



Function Code 04H , Input Registers

- More input registers please refer to Solis full modbus protocol document for hybrid inverters

Modbus RTU protocol Content – Remote Dispatch Registers (System Setting Block)



---Baud Rate: 9600bps
 ---Odd-even check: None
 ---Data Bits: 8
 ---Stop Bit: 1

Read Time Interval >300ms
 Write Time Interval > 700ms

Function Code 03H , Read holding registers
 Function Code 06H, Single write holding registers
 Function Code 10H, Batch write holding registers

Register Address	Function			Note:	Note:
44100	Remote Dispatch Switch	U16	RW	0: OFF 1: ON Default :OFF, others invalid	1. When 34502 = 0xAA55, indicating the hybrid inverter's firmware supports remote dispatch registers: 44100-44199. 34503 indicates the version change of the remote dispatch registers 2. 44100~44199 is used to set the remote dispatch function 3. All the remote dispatch registers will not be saved after power cycle the device 4. The upper computer needs to writes to the inverter in three command blocks. 4.1: 44100~44104 indicates the system setting of remote dispatch 4.2: 44105~44115 means remote dispatch real-time control 4.3: 44116~44199 indicates remote dispatch TOU control Note: (For each command, send no more than 50 registers, There are 42 registers in time period 1~3, and 42 registers in time period 4~6) 5. For register 44103 and 44104, write 0xFFFF to reset the value to default
44101	Remote Dispatch Failsafe Setting	U16	RW	1->1min Range: 1-1440min, Default: 5min	
44102	Remote Dispatch System Limit Switch	U16	RW	BIT00: System Import Limit Switch 0-Disable, 1-Enable BIT01: System Export Limit Switch 0-Disable, 1-Enable BIT02-BIT15: Reserved	
44103	Remote Dispatch System Import Limit	U16	RW	1->100W Single Device Range: 0~ 4*Rated Power Parallel Device Range: 0~ 4* Rated Power* Parallel Unit number Default: 1* Rated Power*Parallel Unit Number Note: Effective when 44102 BIT00 = 1	
44104	Remote Dispatch System Export Limit	U16	RW	1->100W Single Device Range: 0~ 4*Rated Power Parallel Device Range: 0~ 4* Rated Power* Parallel Unit number Default: 1* Rated Power*Parallel Unit Number Note: Effective when 44102 BIT01 = 1	

- 44100 is the main switch for whole remote dispatch function
- 44101 is the failsafe timer setting, if inverter didn't receive any further commands for effective registers in 44100-44199 for X mins (X is set in 44101), inverter will automatically exit remote dispatch mode and recover to original working logic of the device itself.
- 44102 – 44104 are used when the system has a certain export limit or import limit threshold. Once the limit is input in 44102-44104, all the following controls in “real time control” and “timed control” will ensure the limits are not breached.

Corresponding Input Registers

Register Address	Function			Note:
34502	Remote Dispatch – Effective Function Flag	U16	RO	0xAA55, 44100-44199 are effective to use
34503	Remote Dispatch Version	U16	RO	0x0001: Version V01, initial version
34504	Remote Dispatch Running Status	U16	RO	0x00: Not Running in Remote Dispatch Status 0x01: Default Status 0x02: Real Time Control Status 0x03: TOU Control Status

Corresponding Input Registers

Register Address	Function			Note:
34502	Remote Dispatch – Effective Function Flag	U16	RO	0xAA55, 44100-44199 are effective to use
34503	Remote Dispatch Version	U16	RO	0x0001: Version V01, initial version
34504	Remote Dispatch Running Status	U16	RO	0x00: Not Running in Remote Dispatch Status 0x01: Default Status 0x02: Real Time Control Status 0x03: TOU Control Status

- When inverter is running in effective “TOU Control”, the “real-time control” command is not available. And the failsafe timer will be refreshed to 0 and stop counting (Start counting when reached end time)
- Inverter will enter “Default Status” in the following two conditions:
 - When only write “system setting block” but no further “TOU control” or “real-time control” command received.
 - At the end time of the “TOU control”, but no further “TOU control” or “real-time control” command received.
- “Default Status” -> Battery in standby condition(Not charge/discharge) , PV shutdown function disabled, DO control disabled , Allow grid charging, off grid battery standby disabled.

Modbus RTU protocol Content – Remote Dispatch Registers (Real-Time Control Block)



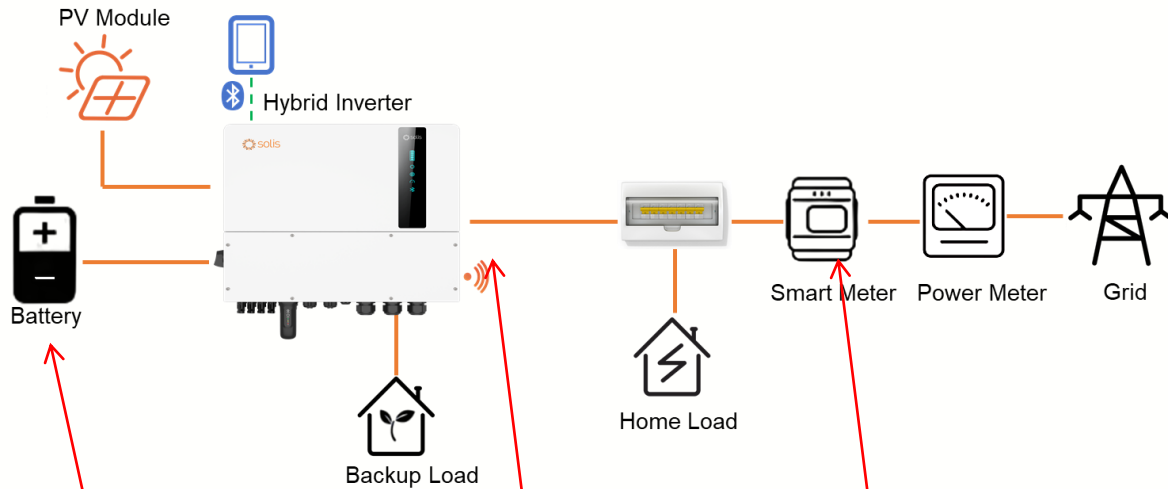
Register Address	Function			Note:
44105	Remote Dispatch Real Time Control Switch	U16	RW	<p>1: Battery Standby Control (No Charge/No Discharge at all) 2: Battery Charge/Discharge Control 3: Grid Connection Point Import/Export Control 4. AC Grid Port Import/Export Control</p> <p>Default :1 , others invalid</p>
44106	Remote Dispatch Real Time Control – Power Value Setting	S32	RW	<p>Definition is determined by 44105 control switch 1->10W Default : 0W</p> <ul style="list-style-type: none"> • When 44105=1, this register's value is not effective • When 44105=2, Negative value is battery discharge power, positive value is battery charge power. Range: Negative max charge/discharge power* parallel unit number ~ Positive max charge/discharge power* parallel unit number • When 44105=3, Negative value is Import power, positive value is Export power. Range: Negative inverter max output power* parallel unit number ~ Positive inverter max output power* parallel unit number • When 44105=4, Negative value is Import power, positive value is Export power. Range: Negative inverter max output power* parallel unit number ~ Positive inverter max output power* parallel unit number
44108	Remote Dispatch Real Time Control – Function Switch	U16	RW	<p>BIT00-01: PV shutdown Switch 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT02-03: DO Control 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT04-05: Allow grid charge 0-Invalid, 1-Allow, 2- Not allow, 3- Invalid. Default : 0 BIT06-07: Off-grid battery standby 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT08-BIT15: Reserved</p> <p>After write invalid value, reading the register will get the previous valid setting</p>

Modbus RTU protocol Content – Remote Dispatch Registers (Real-Time Control Block)



Register Address	Function			Note:
44109	Remote Dispatch Real Time Control – SOC Lower range	U16	RW	1->1% Range: 0 – “Register 44110”
44110	Remote Dispatch Real Time Control – SOC Upper range	U16	RW	1->1% Range: “Register 44109” -100%
44111-44115	Reserved			

Modbus RTU protocol Content – Remote Dispatch Registers (Real-Time Control Block)



Control Point
44105 = 1 or 2

Control Point
44105 = 2

Control Point
44105 = 3

44108 BIT 00-01:
Shutdown PV generation, use in negative price condition

44108 BIT 02-03:
(Only available for models with DO port) DO control to provide ON/OFF signal to turn on off external loads

44108 BIT 04-05:
Define if charging battery from grid is allowed or not

44108 BIT 06-07:
Define the battery behavior during off grid condition,
Enable – Battery keeps standby in off grid condition
Disable – Battery supports backup load in off grid condition

44109-44110:
Defines the target battery SOC range for which the control will be effective.

Modbus RTU protocol Content – Remote Dispatch Registers (TOU Control Block)



Register Address	Function			Note:
44116	Remote Dispatch - TOU Control – Period 1 - Switch	U16	RW	0: Disable 1: Enable Default: 0 , others invalid
44117	Remote Dispatch - TOU Control – Period 1 – Start Time Setting	U16	RW	High Byte: Hour, Range: 0-23, Default 0, others invalid Low Byte: Min, Range: 0-59, Default 0, others invalid Note: Time period can't be overlapped Example: If Time period 1 is 01:00-05:00, Time period 2 is 03:00 – 06:00, time overlapped and the setting will be invalid
44118	Remote Dispatch - TOU Control – Period 1 – End Time Setting	U16	RW	High Byte: Hour, Range: 0-23, Default 0, others invalid Low Byte: Min, Range: 0-59, Default 0, others invalid Note: Time period can't be overlapped Example: If Time period 1 is 01:00-05:00, Time period 2 is 03:00 – 06:00, time overlapped and the setting will be invalid
44119	Remote Dispatch - TOU Control – Period 1 – Control Switch	U16	RW	1: Battery Standby Control (No Charge/No Discharge at all) 2: Battery Charge/Discharge Control 3: Grid Connection Point Import/Export Control 4. AC Grid Port Import/Export Control Default :1 , others invalid

Modbus RTU protocol Content – Remote Dispatch Registers (TOU Control Block)



Register Address	Function			Note:
44120	Remote Dispatch - TOU Control – Period 1 – Power Value Setting	S32	RW	Definition is determined by 44119 control switch Default : 0W <ul style="list-style-type: none"> • When 44113=1, this register’s value is not effective • When 44113=2, Negative value is battery discharge power, positive value is battery charge power. Range: Negative max charge/discharge power* parallel unit number ~ Positive max charge/discharge power* parallel unit number • When 44113=3, Negative value is Import power, positive value is Export power. Range: Negative inverter max output power* parallel unit number ~ Positive inverter max output power* parallel unit number • When 44113=4, Negative value is Import power, positive value is Export power. Range: Negative inverter max output power* parallel unit number ~ Positive inverter max output power* parallel unit number
44121	Remote Dispatch TOU Control – Period 1 – Function Switch	U16	RW	BIT00-01: PV shutdown Switch 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT02-03: DO Control 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT04-05: Allow grid charge 0-Invalid, 1-Allow, 2- Not allow, 3- Invalid. Default : 0 BIT06-07: Off-grid battery standby 0-Invalid, 1-Disable, 2- Enable, 3- Invalid. Default : 0 BIT08-BIT15: Reserved After write invalid value, reading the register will get the previous valid setting
44122	Remote Dispatch TOU Control –Period 1- SOC Lower range	U16	RW	1->1% Range: 0 – “Register 44123”
44123	Remote Dispatch TOU Control – Period 1 – SOC Upper range	U16	RW	1->1% Range: “Register 44122” -100%

Modbus RTU protocol Content – Remote Dispatch Registers (TOU Control Block)



TOU Control Block	
Time Period 1	44116-44123 Remote Dispatch - TOU Control – Period 1 Effective Registers
	44124-44129 Remote Dispatch - TOU Control – Period 1 Reserved Registers
Time Period 2	44130-44138 Remote Dispatch - TOU Control – Period 2 Effective Registers
	44139-44143 Remote Dispatch - TOU Control – Period 2 Reserved Registers
Time Period 3	44144-44152 Remote Dispatch - TOU Control – Period 3 Effective Registers
	44153-44157 Remote Dispatch - TOU Control – Period 3 Reserved Registers
Time Period 4	44158-44166 Remote Dispatch - TOU Control – Period 4 Effective Registers
	44167-44171 Remote Dispatch - TOU Control – Period 4 Reserved Registers
Time Period 5	44172-44180 Remote Dispatch - TOU Control – Period 5 Effective Registers
	44181-44185 Remote Dispatch - TOU Control – Period 5 Reserved Registers
Time Period 6	44186-44194 Remote Dispatch - TOU Control – Period 6 Effective Registers
	44195-44199 Remote Dispatch - TOU Control – Period 6 Reserved Registers

03

**For Developer
Via Soliscloud API (TBD)**



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