

KAC50DP-BC100DE communicates with Third-party EMS

Guidance document

KAC50DP-BC100DE EMS Modbus TCP/RTU protocol explain:

EMS_Function Code 0x03——Read

EMS_Function Code 0x06——Single step write

EMS_Function Code 0x10——Multistep write

KAC_Function Code 0x03_Analog——Read

KAC_Function Code 0x03_Setting——Read

KAC_Function Code 0x03_SN——Read

KAC_Function Code 0x06_Setting——Write

The following BMS and appendix are 0x03 -- Read

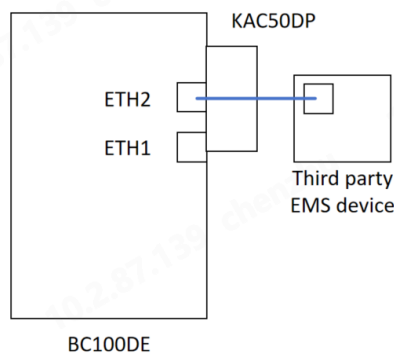
The underlined ones need to be focused on

1 Connect via Modbus-TCP (port number is 2000, not 502, and Select DHCP on the EMS screen)

1.1 Wiring diagram

KAC50DP quantity	1
BC100DE quantity	1
Communication mode	Modbus TCP/IEC-104

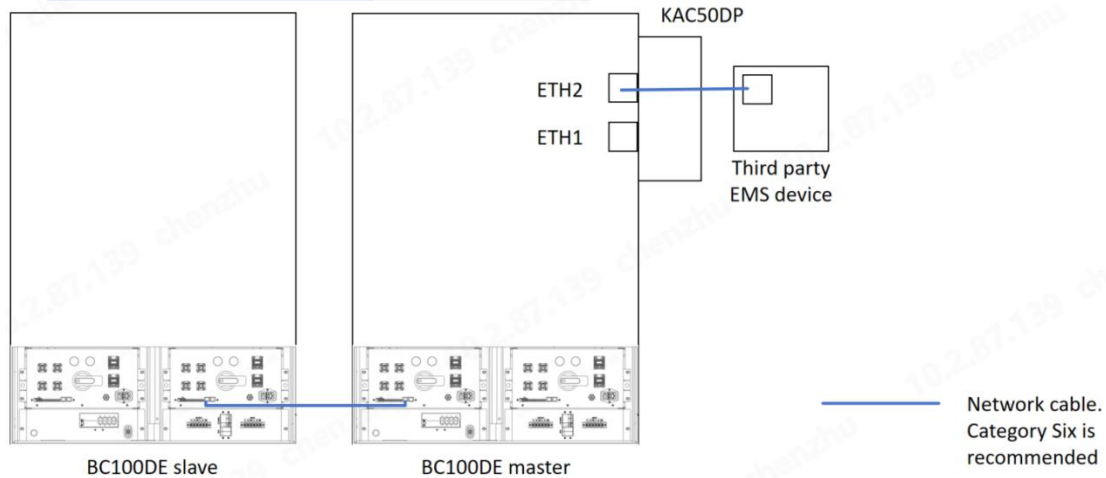
The Modbus TCP connection mode is the same as that of IEC-104



Network cable.
Category Six is
recommended

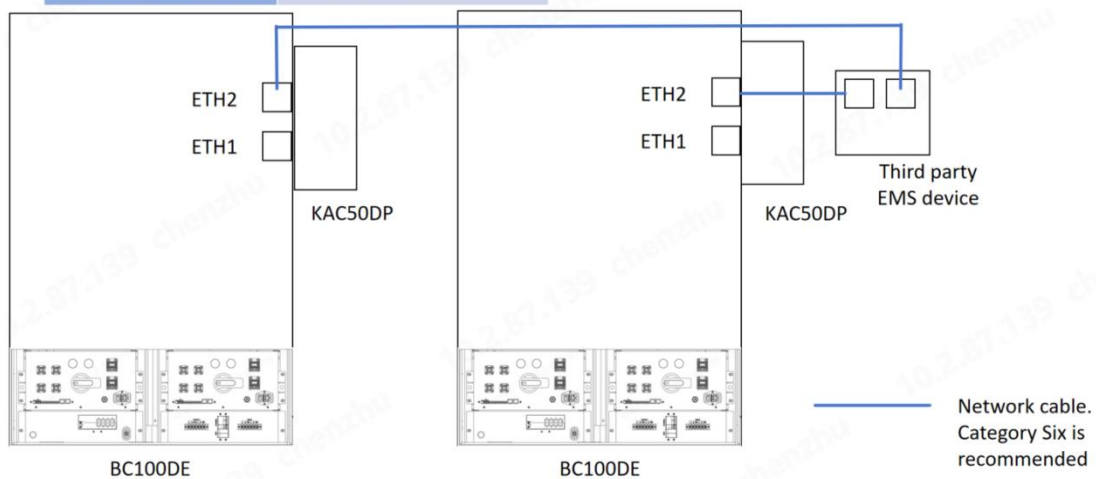
KAC50DP quantity	1
BC100DE quantity	2
Communication mode	Modbus TCP/IEC-104

The Modbus TCP connection mode is the same as that of IEC-104

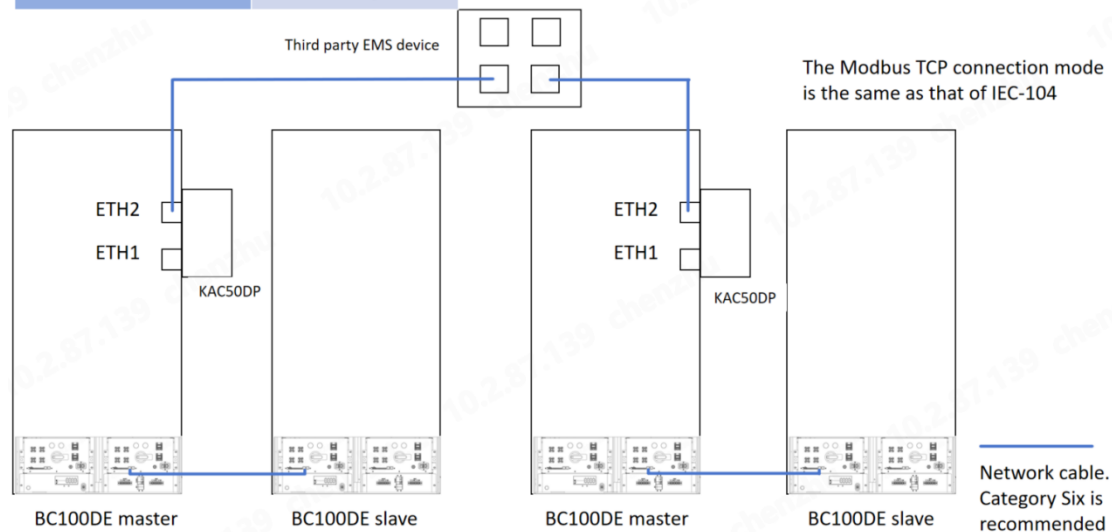


KAC50DP quantity	2
BC100DE quantity	2
Communication mode	Modbus TCP/IEC-104

The Modbus TCP connection mode is the same as that of IEC-104



KAC50DP quantity	2
BC100DE quantity	4
Communication mode	Modbus TCP/IEC-104



1.2 Working mode and register description

1.2.1 Use the four existing working modes of Kstar KEMS

Such as peak shaving

Step 1: Turn it on (Set register " 0x1306 " to "0x5555")

For example: send a power-on message 00 00 00 00 00 06 01 06 1306 5555

If the reply is 00 00 00 00 00 06 01 06 1306 5555, that means the system starts successfully

Format	Transaction identifier	Protocol identifier	Message length	Unit identifier	Function code	Register address	Write value
Byte occupancy	2	2	2	1	1	2	2
Example:	00 00	00 00	00 06	01	06	1306	5555

Step 2: Check whether there are alarms

For Inverter (0x116C~0x117B)

For BMS (0x3001~0x3007)

Step 3: Select work mode

Set register " 0xE10C " to "3"

Step 4: Set peak and valley values: set " 0xE11C " and " 0xE11E ". Unit is 1kw. So, setting "0xE11C" as "10", means setting valley value is 10kw. setting "0xE11E" as "40", means setting peak value is 40kw.

1.2.2 Using the customer's own logic

Step1: Check whether there are alarms

For Inverter (0x116C~0x117B)

For BMS (0x3001~0x3007)

Step2: Select work mode: Set register "0xE10C" to "0".

As long as the customer wants to use their own logic, then it must choose manual mode, equivalent to the customer's EMS in manual control of our EMS.

Step 3: Power on (Set register "0x1306" to "0x5555")

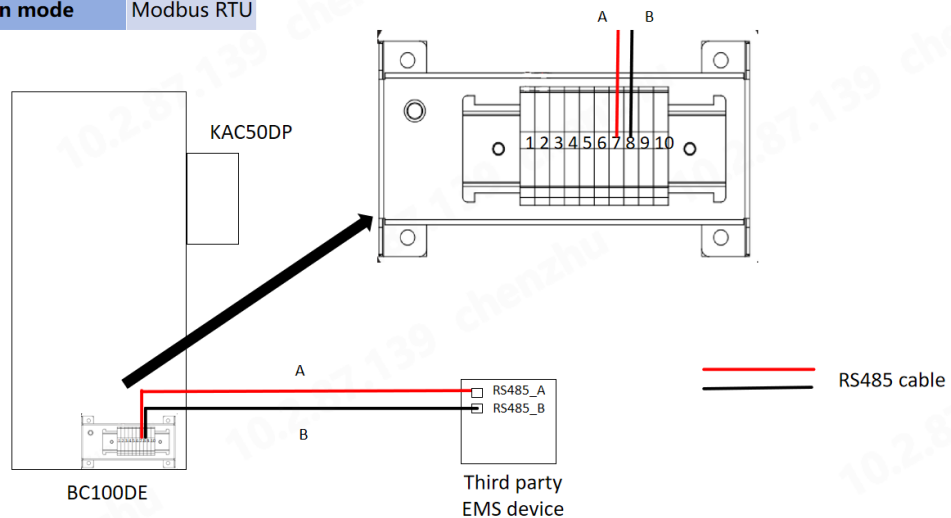
Step 4: Set power (with the register "0x1327")

Step5: Use the logic written by the customer to make the machine run

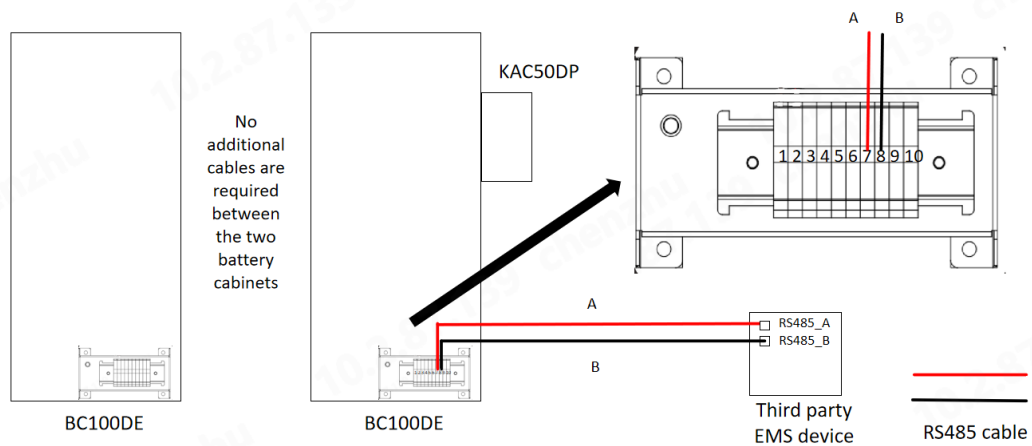
2. Connect via Modbus-RTU

2.1 Wiring diagram

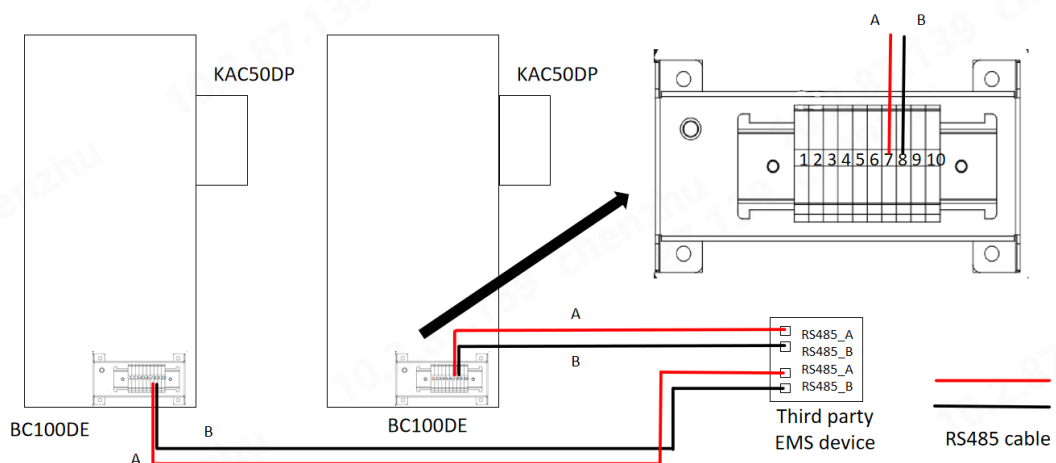
KAC50DP quantity	1
BC100DE quantity	1
Communication mode	Modbus RTU



KAC50DP quantity	1
BC100DE quantity	2
Communication mode	Modbus RTU

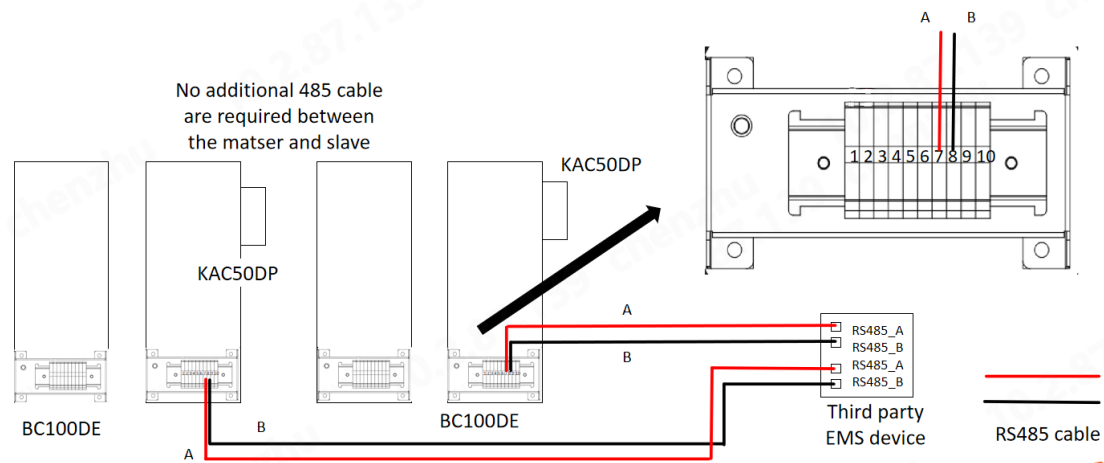


KAC50DP quantity	2
BC100DE quantity	2
Communication mode	Modbus RTU



Note: When two battery systems are parallel, you need to manually change the Modbus address on the EMS screen to distinguish devices.

KAC50DP quantity	2
BC100DE quantity	4
Communication mode	Modbus RTU



Note: When two battery systems are parallel, you need to manually change the Modbus address on the EMS screen to distinguish devices.

2.2 Working mode and register description

2.2.1 Use the four existing working modes of Kstar KEMS

Such as peak shaving

Step 1: Turn it on (Set register " 0x1306 " to "0x5555")

For example: send a power-on message 00 00 00 00 00 06 01 06 1306 5555

If the reply is 00 00 00 00 00 06 01 06 1306 5555, that means the system starts successfully

Format	Device ID	Function code	Register address	Write value	CRC-16 verification
Byte occupancy	1	1	2	2	2
Example:	01	06	1306	5555	92 20

Step2: Check whether there are alarms

For Inverter (0x116C~0x117B)

For BMS (0x3001~0x3007)

Step3: Select work mode: Set register " 0xE10C " to "3"

Step4: Set peak and valley values: set " 0xE11C " and " 0xE11E ". Unit is 1kw. So, setting "0xE11C" as "10", means setting valley value is 10kw. setting "0xE11E" as "40", means setting

peak value is 40kw.

2.2.2 Using the customer's own logic

Step1: Check whether there are alarms

For Inverter (0x116C~0x117B)

For BMS (0x3001~0x3007)

Step2: Select work mode: Set register " 0xE10C " to “0”。

As long as the customer wants to use their own logic, then it must choose manual mode, equivalent to the customer's EMS in manual control of our EMS.

Step 3: Power on (Set register "0x1306" to "0x5555")

Step 4: Set power (with the register "0x1327")

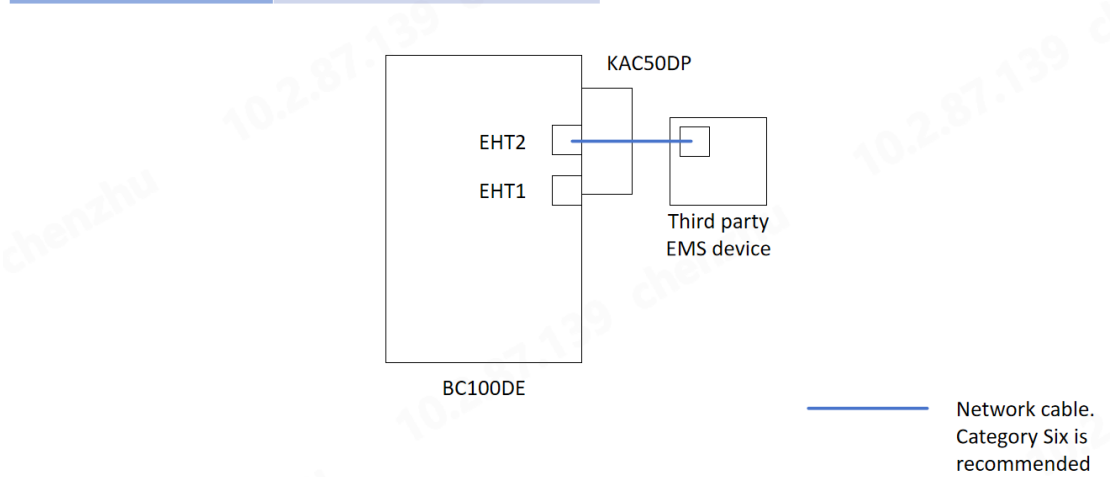
Step5: Use the logic written by the customer to make the machine run

3. Connect via the IEC-104 protocol, port 2404

3.1 Wiring diagram

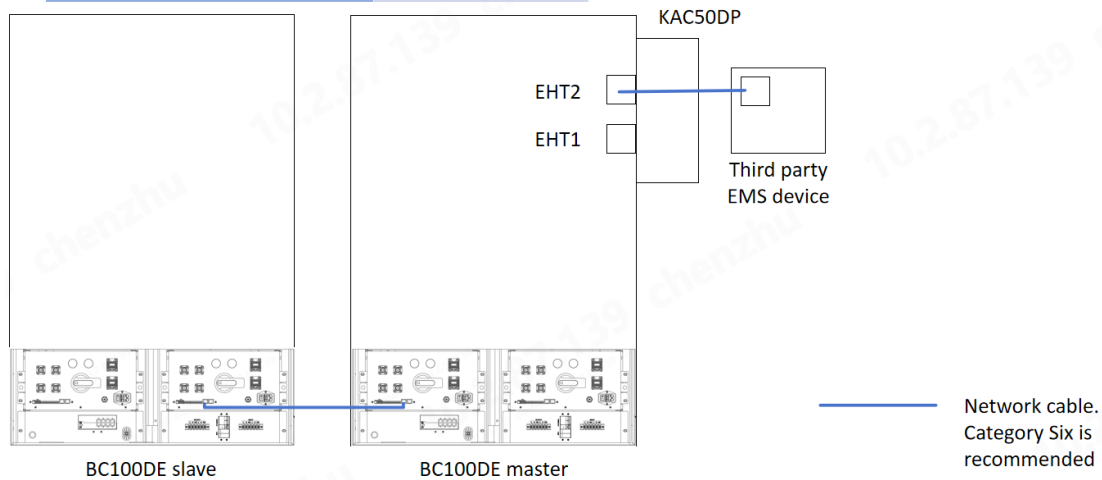
KAC50DP quantity	1
BC100DE quantity	1
Communication mode	Modbus TCP/IEC-104

The Modbus TCP connection mode is the same as that of IEC-104



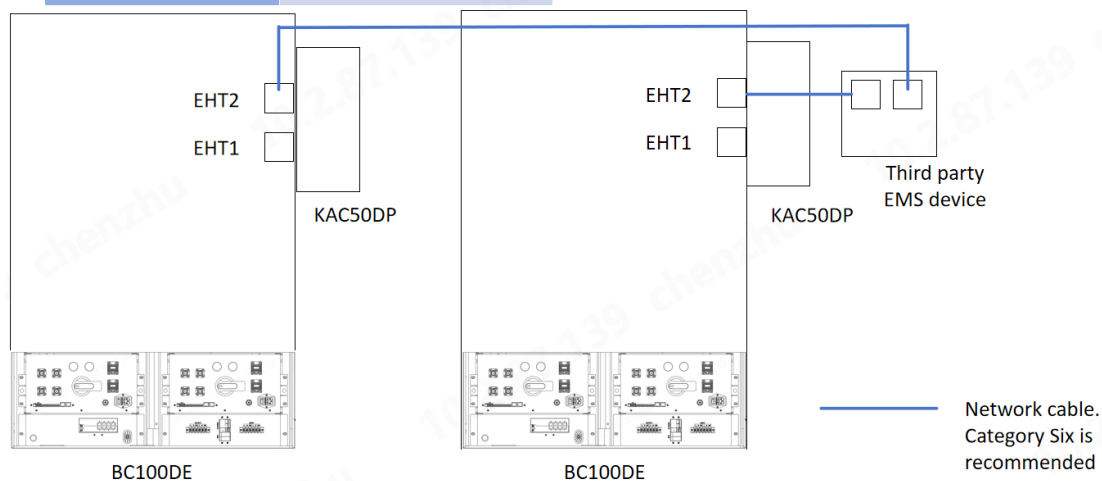
KAC50DP quantity	1
BC100DE quantity	2
Communication mode	Modbus TCP/IEC-104

The Modbus TCP connection mode is the same as that of IEC-104

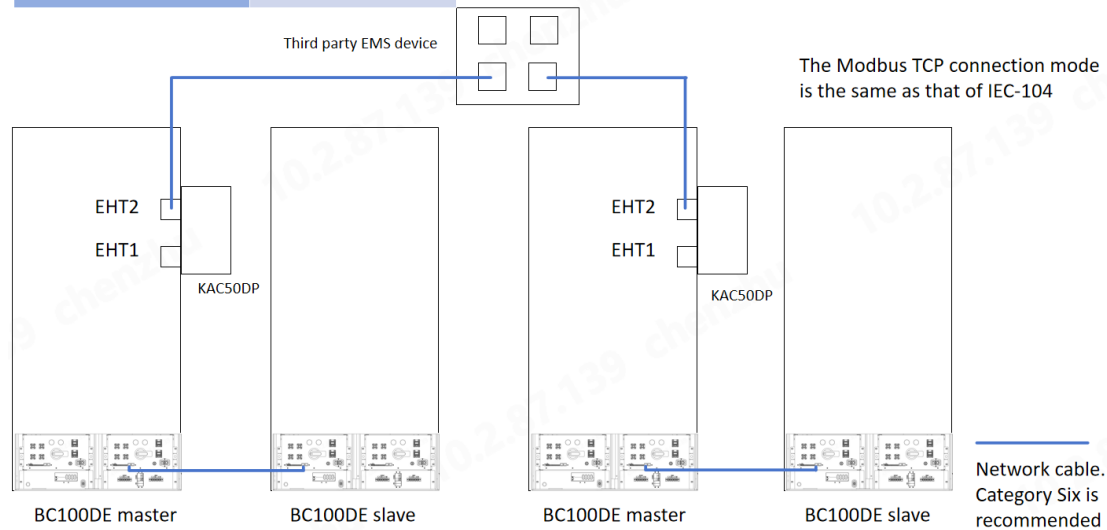


KAC50DP quantity	2
BC100DE quantity	2
Communication mode	Modbus TCP/IEC-104

The Modbus TCP connection mode is the same as that of IEC-104



KAC50DP quantity	2
BC100DE quantity	4
Communication mode	Modbus TCP/IEC-104



3.2 Description of working mode and point number

3.2.1 Use the four existing working modes of Kstar KEMS

3.2.1.1 General Interrogation command: CON<100>

KSTAR 科士达

Table 4 System commands in control direction

TYPE IDENTIFICATION=type identification: = UI8 [1..8]<100..109>

CON<100>:= general call command **C_IC_NA_1**

CON<101>:= counting quantity call command C_CL_NA_1

CON<102>:= read command C_RD_NA_1

CON<103>:= time clock synchronization command (selects one, see 7.6) **C_CS_NA_1**

CON<105>:= reset process command C_RP_NA_1

CON<107>:= test command with CP56Time2a time scale C_TS_TA_1

<108..109>:= reserved for compatibility definition in the future

Table 5 Parameter commands in control direction

TYPE IDENTIFICATION=type identification: =UI8 [1..8]<110..119>

CON<110>:= parameter of measured value, normalized value P_ME_NA_1

CON<111>:= parameter of measured value, scaled value P_ME_NB_1

CON<112>:= parameter of measured value, short floating point number P_ME_NC_1

CON<113>:= activation of parameters P_AC_NA_1

<114..119>:= reserved for compatibility definition in the future

KSTAR 科士达

Table 4 System commands in control direction

TYPE IDENTIFICATION=type identification: = UI8 [1..8]<100..109>

CON<100>:= general call command **C_IC_NA_1**

CON<101>:= counting quantity call command C_CL_NA_1

CON<102>:= read command C_RD_NA_1

CON<103>:= time clock synchronization command (selects one, see 7.6) **C_CS_NA_1**

CON<105>:= reset process command C_RP_NA_1

CON<107>:= test command with CP56Time2a time scale C_TS_TA_1

<108..109>:= reserved for compatibility definition in the future

Table 5 Parameter commands in control direction

TYPE IDENTIFICATION=type identification: =UI8 [1..8]<110..119>

CON<110>:= parameter of measured value, normalized value P_ME_NA_1

CON<111>:= parameter of measured value, scaled value P_ME_NB_1

CON<112>:= parameter of measured value, short floating point number P_ME_NC_1

CON<113>:= activation of parameters P_AC_NA_1

<114..119>:= reserved for compatibility definition in the future

3.2.1.2 Start the KAC50DP

1.Description of the Protocol

1.Overview of the Protocol Overview...

2.Definition of application protocol...

3.Port number

4.Max number k of uncomplete...

5.Selection of application service...

6.Communications contents

1. Tele-indication

2. Tele-measurement

3. Tele-command

4. Tele-adjusting

KAC		
Start address of the Nth point number:(n-1)*10+60101		
60101	Remote switch on/off	0: power off; 1: power on

40

Implemented in April 2021

Copyright of this document belongs to Shenzhen Kstar Science & Technology Co., Ltd. All rights reserved.

KSTAR 科士达

BMS Sys		
60201	ResetAccess	0: No action; 1: Reset
60202	ResetMBMUSystem	0: No action; 1: Reset
60203	ResetSBMUSystem	0: No action; 1: Reset
60204	MBMUSystemRestoreFactorySettings	0: No action; 1: Reset
60205	SBMUSystemRestoreFactorySettings	0: No action; 1: Reset

3.2.1.3 Select from four existing operating modes of Kstar (except manual mode)

1.Description of the Protocol

1.Overview of the Protocol Overview...

2.Definition of application protocol...

3.Port number

4.Max number k of uncomplete...

5.Selection of application service...

6.Communications contents

1. Tele-indication

2. Tele-measurement

3. Tele-command

4. Tele-adjusting

* 3		
61709	Running Mode	0:Manual Control, 1:Self Consume, 2:Time of Use, 3:Peak Shifting, 4:Battery Backup
61710	Self Consume: Time of Charging Enable	0: Not enabled; 1: Enable
61711	Self Consume: Time of Charging from Grid(Start Hour)	0~23
61712	Self Consume: Time of Charging from Grid(Start Min)	0~59
61713	Self Consume: Time of Charging from Grid(End Hour)	0~23
61714	Self Consume: Time of Charging from Grid(End Min)	0~59
61715	Self Consume: Time of Charging from Grid(Active Power)	-50~0
61716	Self Consume: Expoer Enable	0: Not enabled; 1: Enable
61717	Self Consume: Expoer Power	Positive numbers(kW)
61718	Self Consume: Demand Enable	0: Not enabled; 1: Enable
61719	Self Consume: Demand Power	Positive numbers(kW)
61720	Time of Use: Expoer Enable	0: Not enabled; 1: Enable
61721	Time of Use: Expoer Power	Positive numbers(kW)
61722	Time of Use: Demand Enable	0: Not enabled; 1: Enable
61723	Time of Use: Demand Power	Positive numbers(kW)
61724	Time of Use: Weekday1 (Start Hour)	0~23
61725	Time of Use: Weekday1 (Start Min)	0~59

3.2.2 Using the customer's own logic

3.2.2.1 General Interrogation command (Once 5min) CON<100>

<div>目录 章节 书签 查找和替换 X</div> <div>▼ ▲ + - 智能识别目录</div> <div>▼ I.Description of the Protocol</div> <div>1.Overview of the Protocol Ove ...</div> <div>2.Definition of application prot ...</div> <div>3.Port number</div> <div>4.Max number k of uncomplete ...</div> <div>5.Selection of application servic...</div> <div>▼ II.Communications contents</div> <div>1. Tele-indication</div> <div>2. Tele-measurement</div> <div>3. Tele-command</div> <div>4. Tele-adjusting</div>	<div>KSTAR科士达</div> <div>Table 4 System commands in control direction</div> <div>TYPE IDENTIFICATION=type identification: = UI8 [1..8]<100..109></div> <div>CON<100>:= general call command C_IC_NA_1</div> <div>CON<101>:= counting quantity call command C_CI_NA_1</div> <div>CON<102>:= read command C_RD_NA_1</div> <div>CON<103>:= time clock synchronization command (selects one, see 7.6) C_CS_NA_1</div> <div>CON<105>:= reset process command C_RP_NA_1</div> <div>CON<107>:= test command with CP56Time2a time scale C_TS_TA_1</div> <div><108..109>:=reserved for compatibility definition in the future</div> <div>Table 5 Parameter commands in control direction</div> <div>TYPE IDENTIFICATION=type identification: =UI8 [1..8]<110..119></div> <div>CON<110>:= parameter of measured value, normalized value P_ME_NA_1</div> <div>CON<111>:= parameter of measured value, scaled value P_ME_NB_1</div> <div>CON<112>:= parameter of measured value, short floating point number P_ME_NC_1</div> <div>CON<113>:= activation of parameters P_AC_NA_1</div> <div><114..119>:= reserved for compatibility definition in the future</div>
--	---

3.2.2.2 Select Manual mode (select "0")

目录 章节 书签 查找和替换

▼ ▲ + -

智能识别目录

I.Description of the Protocol

1.Overview of the Protocol Ove ...

2.Definition of application prot ...

3.Port number

4.Max number k of uncomplete ...

5.Selection of application servic ...

II.Communications contents

1. Tele-indication

2. Tele-measurement

3. Tele-command

4. Tele-adjusting

61709	Running Mode	* 3 0:Manual Control, 1:Self Consume, 2:Time of Use, 3:Peak Shifting, 4:Battery Backup
61710	Self Consume: Time of Charinging Enable	0: Not enabled; 1: Enable
61711	Self Consume: Time of Charinging from Grid(Start Hour)	0`23
61712	Self Consume: Time of Charinging from Grid(Start Min)	0`59
61713	Self Consume: Time of Charinging from Grid(End Hour)	0`23
61714	Self Consume: Time of Charinging from Grid(End Min)	0`59
61715	Self Consume: Time of Charinging from Grid(Active Power)	-50`0
61716	Self Consume: Expoer Enable	0: Not enabled; 1: Enable
61717	Self Consume: Expoer Power	Positive numbers(kW)
61718	Self Consume: Demand Enable	0: Not enabled; 1: Enable
61719	Self Consume: Demand Power	Positive numbers(kW)
61720	Time of Use: Expoer Enable	0: Not enabled; 1: Enable
61721	Time of Use: Expoer Power	Positive numbers(kW)
61722	Time of Use: Demand Enable	0: Not enabled; 1: Enable
61723	Time of Use: Demand Power	Positive numbers(kW)
61724	Time of Use: Weekday1 (Start Hour)	0`23
61725	Time of Use: Weekday1 (Start Min)	0`59

3.2.2.3 Start KAC50DP

目录 章节 书签 查找和替换

1. Description of the Protocol

1. Overview of the Protocol Overview...

2. Definition of application protocol...

3. Port number

4. Max number k of incomplete...

5. Selection of application service...

II. Communications contents

1. Tele-indication

2. Tele-measurement

3. Tele-command

4. Tele-adjusting

KAC		
Start address of the Nth point number: $(n-1)*10+60101$		
60101	Remote switch on/off	0: power off; 1: power on

40

Implemented in April 2021

Copyright of this document belongs to Shenzhen Kstar Science & Technology Co., Ltd. All rights reserved.

KSTAR 科士达

BMS Sys		
60201	ResetAccess	0: No action; 1: Reset
60202	ResetMBMUSystem	0: No action; 1: Reset
60203	ResetSBMUSystem	0: No action; 1: Reset
60204	MBMUSystemRestoreFactorySettings	0: No action; 1: Reset
60205	SBMUSystemRestoreFactorySettings	0: No action; 1: Reset

3.2.2.4 Set power

目录 章节 书签 查找和替换

1. Description of the Protocol

1. Overview of the Protocol Overview...

2. Definition of application protocol...

3. Port number

4. Max number k of incomplete...

5. Selection of application service...

II. Communications contents

1. Tele-indication

2. Tele-measurement

3. Tele-command

4. Tele-adjusting

61104	Battery 1 overvoltage alarm point	0.1V
61105	Battery 1 overvoltage protection point	0.1V
61106	Battery 1 overvoltage recovery point	0.1V
61107	Battery 1 undervoltage alarm point	0.1V
61108	Battery 1 undervoltage protection point	0.1V
61109	Battery 1 undervoltage protection recovery point	0.1V
61110	Max charging current of battery 1	0.1A
61111	Max discharge current of battery 1	0.1A
61112	Battery 2 overvoltage alarm point	0.1V
61113	Battery 2 overvoltage protection point	0.1V
61114	Battery 2 overvoltage recovery point	0.1V
61115	Battery 2 undervoltage alarm point	0.1V
61116	Battery 2 undervoltage protection point	0.1V
61117	Battery 2 undervoltage protection recovery point	0.1V
61118	Max charging current of battery 2	0.1A
61119	Max discharge current of battery 2	0.1A
61120	Active power setting	0.1Kw
61121	Reactive power setting	0.1Kvar
61122	Reactive power mode	0: Disable 1: By Power Factor 2: By Value
61123	Grid overvoltage section-2	0.1V
61124	Grid overvoltage section-1	0.1V

42

Implemented in April 2021

Copyright of this document belongs to Shenzhen Kstar Science & Technology Co., Ltd. All rights reserved.

3.2.2.5 Use the logic written by the customer to make the machine run