Remote Control Description for SOFARSOLAR Hybird Inverter

Model   HYD 5KTL-3PH, HYD 6KTL-3PH, HYD 8KTL-3PH,
HYD 10KTL-3PH, HYD 15KTL-3PH, HYD 20KTL-3PH,
HYD 3K-EP, HYD 3K6-EP, HYD 4K-EP, HYD 4K6-EP,
HYD 5K-EP, HYD 5K5-EP, HYD 6K-EP,
ESI 3K-S1, ESI 3K6-S1, ESI 4K-S1, ESI 4K6-S1,
ESI 5K-S1-A, ESI 5-S1, ESI 6K-S1,

Revision

Version	Date	Description
01	2022-6-29	First release
02	2022-7-1	1. Fix the wrong address of "Passive_Manual_Bup" 2. Add chapter 3

Catalogue

1. Introduction

1.1. System Chart
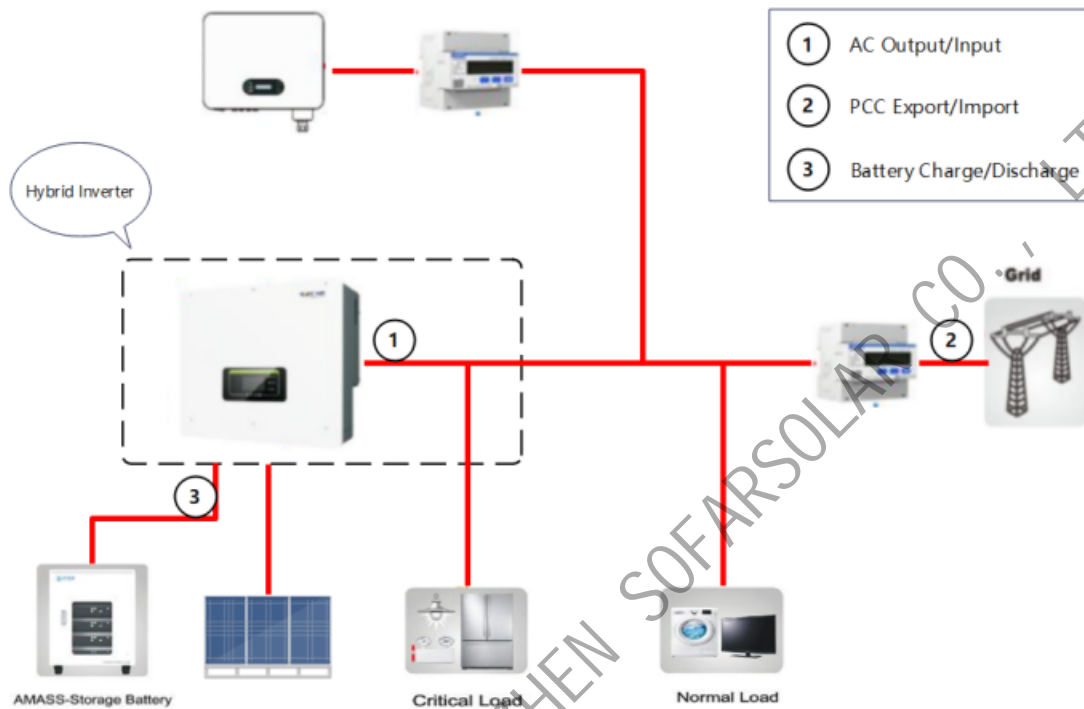
Figure 1. System Chart

1.2. Nodes

| ID	Item	Description
1	AC Output/Input	AC side in hybrid inverter. The AC output power is simultaneously connected to the grid and supplies power for critical loads. Positive value means output. Negative value means input.
2	PCC Export/Import	Point of common connection. Positive value means export. Negative value means import.
3	Battery Charge/Discharge	Battery side in hybrid inverter. Positive value means charging. Negative value means discharging.

1.3. Passive Mode Expression
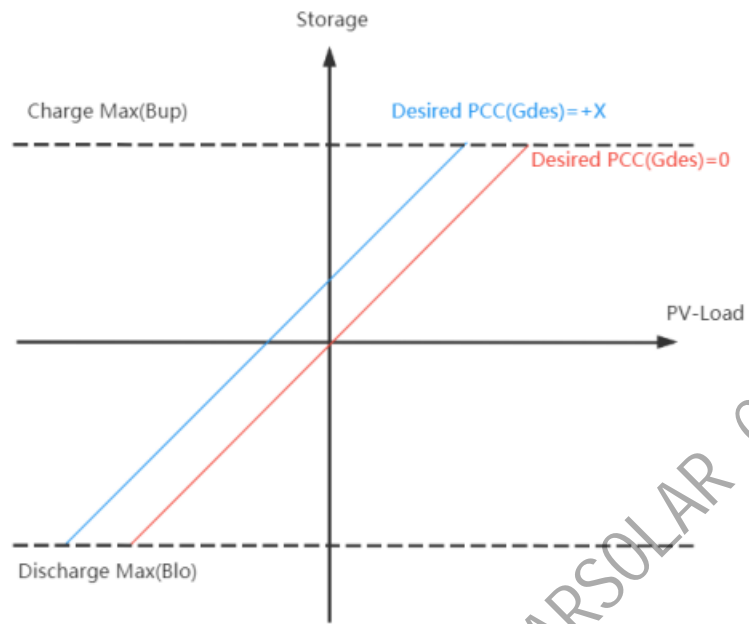
Figure 2. Passive Mode in Cartesian Coordinates

2. Protocol

2.1. Interface

Hardware protocol:	RS485
Baudrate:	9600bps (Default)
Parity:	None
StopBit:	1bit
Communication protocol:	Modbus-RTU
CRC:	Modbus-CRC16
Format:	Big Endian (Example:When sending a register of type U16, send the high byte first, then the low byte)

2.2. Registers

ADDR	Item	Type	Scale	Unit	RW	Description
4137	EPS_Control	U16			RW	EPS On/Off control. 0：Turn off EPS mode 1：Turn on EPS mode Notice:This register does not support frequent writes.
4356	Remote_On_Off_Control	U16			RW	Shutdown control, including DC and AC side. 0: Turn off the inverter 1: Turn on the inverter Notice:This register does not support frequent writes.
4357	Power_Control	U16			RW	AC power control settings. Bit0: Active power control Bit1: Reactive power control Bit2: Reactive power mode （0: Reactive_Power; 1: Power_Factor）
4358	Active_Power_Output_Limit	U16	0.1	%	RW	AC output active power maximum percentage. Range: 0~100.0%
4359	Active_Power_Input_Limit	U16	0.1	%	RW	AC input active power maximum percentage. Range: 0~100.0%
4360	Reactive_Power_	I16	0.1	%	RW	AC reactive power percentage.

	Setting					Range: -100.0~100.0% Notice: Maximum reactive power is limit by the specific model. Positive value means underexcited. Negetive value means overexcited.
4361	Power_Factor_S etting	I16	0.01	p.u.	RW	AC power factor. Range: -1.00~1.00 Notice: Maximum reactive power is limit by the specific model. Positive value means underexcited. Negetive value means overexcited.
4362	Active_Power_Li mit_Speed	U16	1	%	RW	The change rate of active power. Range: 1~3000%
4363	Reactive_Power_ Response_Time	U16	0.1	Sec.	RW	Reactive power response time. Range: 0.1~600.0(Second)
4368	Energy_Storage_ Mode_Control	U16			RW	Storage mode options. 0：Self-Use mode 1：Time-of-Use mode 2：Timing mode 3：Passive mode 4：Peak shaving mode Notice:This register does not support frequent writes.
4484	Passive_Timeout	U16	1	Sec.	RW	Passive mode timeout period. 0: Never timeout Other value: seconds of timeout When the inverter does not receive any communication frame within the time set in this register, the inverter forces Passive_Timeout_Action. Notice:This register does not support frequent writes.
4485	Passive_Timeout _Action	U16			RW	Passive mode timeout action. 0: Forced to standby 1: Forced to the last storage mode before entering passive mode Notice:This register does not support frequent writes.
4486	Passive_Rsvd1	U16			RW	Reserved
4487- 4488	Passive_Manual_ Gdes	I32	1	Watt	RW	Desired PCC power in Passive manual mode. Range: -999999~999999W

						Positive value means export. Negative value means import.
4489-4490	Passive_Manual_Blo	I32	1	Watt	RW	Minimum battery power in Passive manual mode. Range: -999999~999999W Positive value means charging. Negative value means discharging.
4491-4492	Passive_Manual_Bup	I32	1	Watt	RW	Maximum battery power in Passive manual mode. Range: -999999~999999W Positive value means charging. Negative value means discharging.

3. Example

ADDR	Supported model(s)	Notice	Command example
4137-4138	HYD 5-20KTL-3PH HYD 3-6K-EP ESI 3-6K-S1	These registers must be written from 4137. Address 4138 is a reserved register.	Turn on EPS: 01 10 10 29 00 02 04 00 01 00 00 AD DD Turn off EPS: 01 10 10 29 00 02 04 00 00 00 00 FC 1D
4356	HYD 5-20KTL-3PH HYD 3-6K-EP ESI 3-6K-S1		Turn on inverter: 01 10 11 04 00 01 02 00 00 A6 D5 Turn off inverter: 01 10 11 04 00 01 02 00 01 67 15
4357-4363	HYD 5-20KTL-3PH (from V07xxxx)	These registers must be written from 4357.	Active power control off; Reactive power mode on; 90% underexcited reactive power response in 1second: 01 10 11 05 00 07 0E 00 06 03 E8 03 E8 03 84 00 5A 00 64 00 0A DF 3F
4368	HYD 5-20KTL-3PH HYD 3-6K-EP ESI 3-6K-S1		Set to Self-use mode: 01 10 11 10 00 01 02 00 00 A5 C1 Read the current mode: 01 03 11 10 00 01 80 F3
4484-4485	HYD 5-20KTL-3PH (from V09xxxx)	These registers must be written from 4484.	The timeout period is 10 seconds. After the timeout, force to enter standby: 01 10 11 84 00 02 04 00 0A 00 00 1A 6E
4487-4492	HYD 5-20KTL-3PH HYD 3-6K-EP ESI 3-6K-S1 (4487 is not available. Start from 4489)	These registers must be written from 4487.	Force charge 1000W: 01 10 11 87 00 06 0C 00 00 00 00 00 00 00 03 E8 00 00 03 E8 15 8A Force discharge 1000W: 01 10 11 87 00 06 0C 00 00 00 00 FF FF FC 18 FF FF FC 18 40 0B Desired PCC power is 1000W sold to the grid. The maximum charging and discharging power of the battery is 6000W: 01 10 11 87 00 06 0C FF FF FC 18 FF FF E8 90 00 00 17 70 E7 C4