Creek 2 User Manual

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Contents

1. Introduction

1.1 Important Safety Instructions

Danger to life due to high voltage in the inverter!

- All work must be carried out by qualified electrician.
- The appliance is not to be used by children or persons with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children should be supervised to ensure that they do not play with the appliance.

Caution!

- Danger of burn injuries due to hot enclosure parts!
- During operation, the upper lid of the enclosure and the enclosure body may become hot.
- Only touch the lower enclosure lid during operation.

Caution!

- Possible damage to health as a result of the effects of radiation!
- Do not stay closer than 20 cm to inverter for any length of time.

Note!

- Ground the PV generator.
- Comply with the local requirements for grounding the PV modules and the PV generator. It recommends connecting the generator frame and other electrically conductive surfaces in a manner which ensures continuous conduction and ground these in order to have optimal protection of system and persons.

Warning!

- Ensure input DC voltage sMax. DC voltage. Over voltage may cause permanent damage to inverter or other losses, which will not be included in warranty!

Warning!

- Authorized service personnel must disconnect both AC and DC power from inverter before attempting any maintenance or cleaning or working on any circuits connected to inverter.

- Risk of electric shock!

- Accessories only together with the inverter shipment are recommended here. Otherwise, may result in a risk of fire, electric shock, or injury to person.

- Make sure that existing is in good condition and the wire is not undersized.

- Do not disassemble any parts of inverter which are not mentioned in installation guide. It contains no user-serviceable parts. See Warranty for instructions on obtaining services. Attempting to service the inverter yourself may result in a risk of electric shock or fire and will void your warranty.

- Keep away from flammable, explosive materials to avoid fire disaster.

- The installation place should be away from humid or corrosive substance.

- Authorized service personnel must use insulated tools when installing or working with this equipment.

- PV modules shall have an IEC 61730 class A rating.

- Never touch either the positive or negative pole of PV connecting device. Strictly prohibit touching both of them at the same time.

- The unit contains capacitors that remain charged to a potentially lethal voltage after the MAINS, battery and PV supply has been disconnected.

- Hazardous voltage will present for up to 5 minutes after disconnection from power supply.

- CAUTION-RISK of electric shock from energy stored in capacitor, Never operate on the inverter couplers, the MAINS cables, Battery cables, PV cables or the PV generator when power is applied. After switching off the PV, battery and Mains, always wait for 5 minutes to let the intermediate circuit capacitors discharge before unplugging DC, battery inplug and MAINS couplers.

- When accessing the internal circuit of inverter, it is very important to wait 5 minutes before operating the power circuit or demounting the electrolyte capacitors inside device. Do not open the device beforehand since the capacitors require time sufficiently discharge!

1.2 Basic Function

Hybrid Inverter Series are high quality inverters which can convert solar energy to AC energy and store energy into battery.

The inverter can be used to optimize self-consumption, store in the battery for future use or feed in to public grid. Work mode depends on PV energy and user's preference. It can provide power for emergency use during the grid lost by using the energy from battery and inverter (generated from PV).

System Diagram
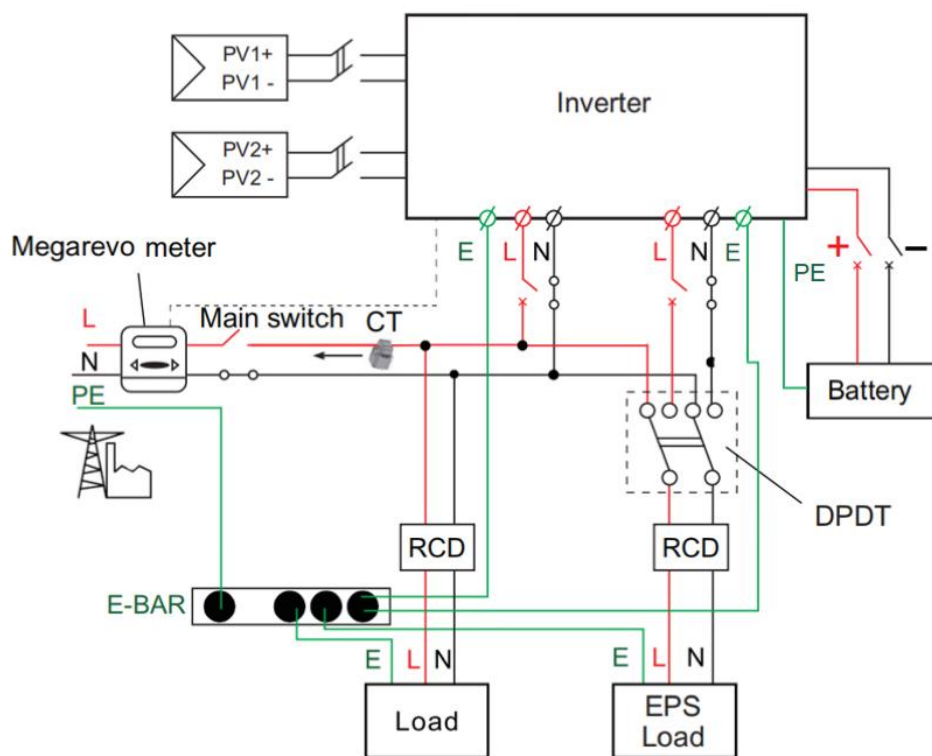
1.3 Work Modes

Hybrid Inverter provides multiple work modes based on different requirements.

Work modes: **Self-Use (with PV connected)**

Priority: load >battery>grid

This mode applies the area that has low feed-in tariff and high energy price.

The power generated from PV will be used to supply the local loads firstly, then to charge the battery. The excess power will be transmitted to the public grid.

Work modes: **Self-Use (without PV)**

When no PV supplied, battery will discharge for local loads firstly, and gird will supply power when the battery capacity is not enough.

Work modes: **Peak Shift**

Priority: battery>load >grid (when charging)

Priority: load >battery>grid (when discharging)

This mode applies the area that has electricity price between peak and valley.

User can use off-peak electricity to charge the battery. The charging and discharging time can be set flexibly, and it also allows to choose whether charge from the grid or not.

Work modes: **BAT Priority**

Priority: battery>load >grid

This mode applies the area that has frequent power outages. Besides this mode ensures the battery will have enough energy to supply when the grid is off.

In this mode battery will be charging forcibly in the setting time and will never be discharged when the grid is on, and it also allows to choose whether charge from the grid or not.

1.4 Dimension
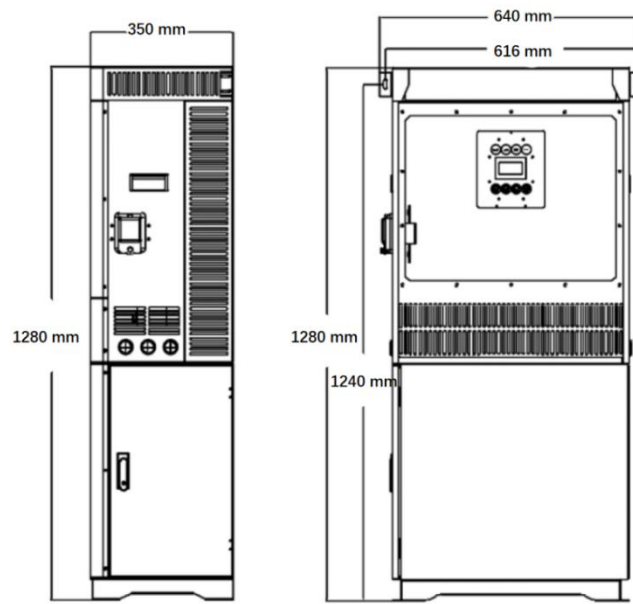
2. Interface Definition and Technical Data

2.1 Interface Definition
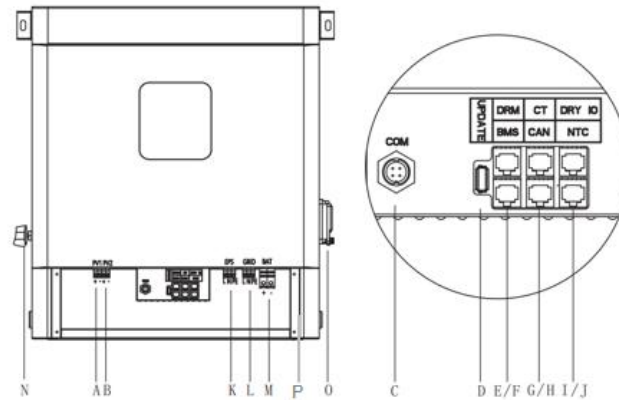
Object	Description
A / B	PV1+ / PV1- / PV2+ / PV2-
C	WiFi port for external WiFi
D	USB port for firmware upgrade
E / F	DRM / BMS
G / H	CT / CAN
I / J	DRY IO / NTC
K	EPS (Emergency Power Supply)
L	Grid
M	Battery+ / Battery-
N	PV switch
O	Battery switch
P	Earthing Point

2.2 General Data

Model	CFE Creek 2 3kW	CFE Creek 2 3.6kW	CFE Creek 2 4kW
	CFE Creek 2 4.6kW	CFE Creek 2 5kW	CFE Creek 2 6kW
Dimension [W/H/D](mm)	580*350*1280		
Dimension of packing [W/H/D](mm)	1325*645*385 / 1339*659*413		
Inverter part weight [kg]	41.5		
Net weight [kg] (Without Package)	67		
Gross weight [kg] (With Package)	71		
Installation	Stack		
Operating temperature range [℃]	-25～+60 (derating at 45)		
Storage temperature [℃]	-25～+60		
Storage / Operation relative humidity	4%~100% (Condensing)		
Altitude [m]	<2000		
Ingress Protection	IP20 (for indoor use)		
Protective Class	I		
Night-time consumption	<3W		
Over Voltage Category	III (MAINS), II (PV, Battery)		
Pollution Degree	II		
Cooling	Passive		
Noise level	40dB		
Inverter Topology	non-isolated		
Communication Interface	CAN / RS485 / WIFI / LAN / DRM		

2.3 Technical Data

Model	CFE Creek 2 3kW	CFE Creek 2 3.6kW	CFE Creek 2 4kW	CFE Creek2 4.6kW	CFE Creek 2 5kW	CFE Creek 2 6kW
DC input						
Max. recommended DC power [W]	4600	4600	6000	6000	7000	7000
Max. PV DC voltage [V]	550	550	550	550	550	550
Nominal DC operating voltage [V]	360	360	360	360	360	360
MPPT voltage range [V]	125-500	125-500	125-500	125-500	125-500	125-500
MPPT voltage range @full load [V]	150-500	150-500	170-500	170-500	220-500	220-500
Max. input current [A]	14/14	14/14	14/14	14/14	14/14	14/14
Max. short circuit current [A]	17.5 /17.5	17.5/17.5	17.5/17.5	17.5/17.5	17.5/17.5	17.5/17.5
Start DC input voltage [V]	125	125	125	125	125	125
No. of MPP trackers	2	2	2	2	2	2
Strings per MPP tracker	1	1	1	1	1	1
Max. Inverter backfeed current to array	0	0	0	0	0	0
DC disconnection switch	/					

AC output						
Nominal AC Power [VA]	3000	3680	4000	4600	5000	6000
Max. apparent AC Power [VA]	3000	3680	4000	4600	5000	6000
Rated output voltage (range) [V]	230 (176 to 270)					
Rated output Frequency [Hz]	50 / 60					
Nominal AC current [A]	13	16	17.4	20	21.7	26
Max. AC current [A]	13	16	17.4	20	21.7	26
Displacement power factor	0.8 leading-0.8 lagging					
Total Harmonic Distortion (THDi)	< 2%					
Load control	optional					

AC input						
Nominal AC Power [VA]	3000	3680	4000	4600	5000	6000
Rated grid voltage (range) [V]	230 (176 to 270)					
Rated grid Frequency [Hz]	50 / 60					
Nominal AC current [A]	13	16	17.4	20	21.7	26
Max. AC current [A]	13	16	17.4	20	21.7	26
Displacement power factor	0.8 leading-0.8 lagging					
AC inrush current [A]	35	35	35	35	35	35
EPS output						
EPS rated power [VA]	3000	3680	4000	4600	5000	6000
Max. EPS power [VA]	3000	3680	4000	4600	5000	6000
EPS rated voltage, Frequency	230VAC, 50 / 60Hz					
EPS rated current [A]	13	16	17.4	20	21.7	26
Max. EPS current [A]	13	16	17.4	20	21.7	26
Switch time [s]	<20ms					
Total harmonic distortion	<2%					
Parallel operation	Yes					
Compatible with the generator	Yes (start / stop signal only)					

Battery parameter					
Battery type	Lithium battery / Lead-ACID				
Battery voltage range [V]	40-58				
Recommended battery voltage [V]	51.2				
Cut Off Voltage [V]	40				
Max. Charging Voltage [V]	58				
Max. Protective Voltage [V]	58				
Max. charge/discharge current [A]	95 / 62. 5	95 / 76. 6	95 / 83. 3	95 / 95.8	95 / 104.2	95 / 110
Peak charge/discharge current [A]	95 / 62.5	95 / 76.6	95 / 83.3	95 / 95.8	95 / 104.2	95 / 110
Communication interfaces	CAN / RS485 / WI-FI / LAN / DRM				
Total Energy [kWh]	10.24				
Reverse connect Protection (AC side)	Yes				
Efficiency					
MPPT efficiency	99.9%				
Europe efficiency	97%				
DC Max. efficiency	97.6%				
Max. Battery charge efficiency	95%				
Max. Battery discharge efficiency	95%				

2.4 Safety Protection Features

Safety & Protection	
Over / under voltage protection	YES
DC isolation protection	YES
Monitoring ground fault protection	YES
Grid protection	YES
DC injection monitoring	YES
Back feed current monitoring	YES
Residual current detection	YES
Anti-islanding protection	YES
Over load protection	YES
Over heat protection	YES
Max. output fault current [A]	55
Max. output over current [A]	28.7

3. Installation

3.1 Check for Physical Damage

Make sure the inverter is intact during transportation. If there is any visible damage, such as cracks. Please contact your dealer immediately.
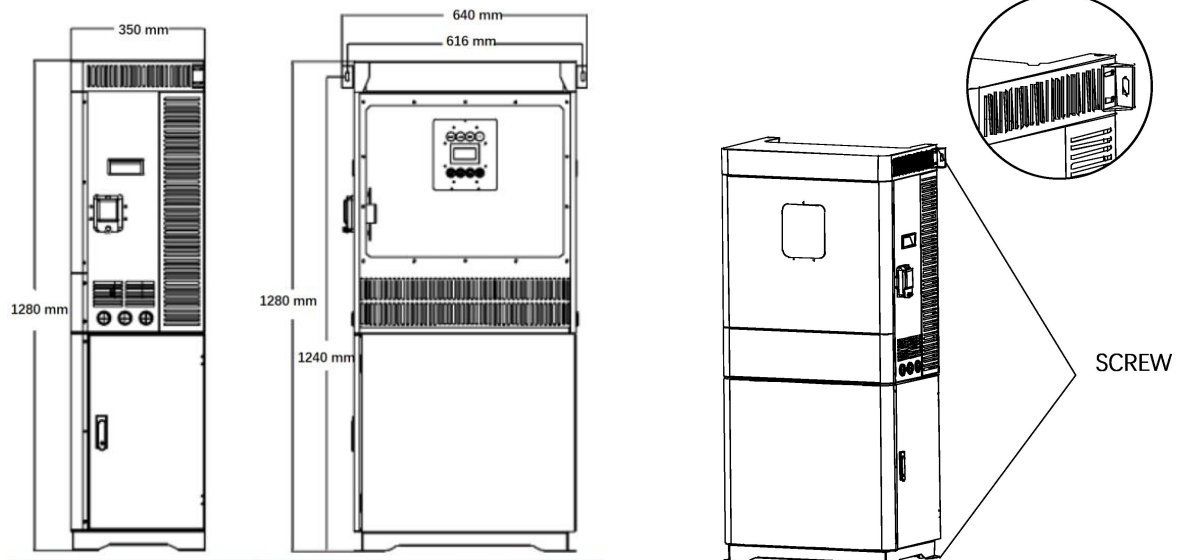
3.2 Tools Required for Installation

Installation tools: crimping pliers for binding post and RJ45, screwdriver, manual wrench etc.

3.3 Installation Step

Step 1: Creek machine fixing, the top is fixed to the wall, and the bottom is fixed to the ground, using M8 Expansion screws.

Step 2: The battery fixing, as shown in the figure, push from the right, and a total of 8 M5*12screws are used. Please pay attention to the direction when assembling the battery.
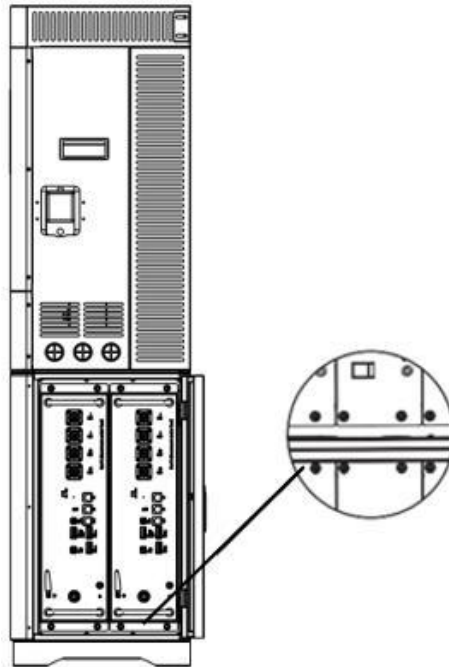
Step 3: A diagram of the cable harness connection
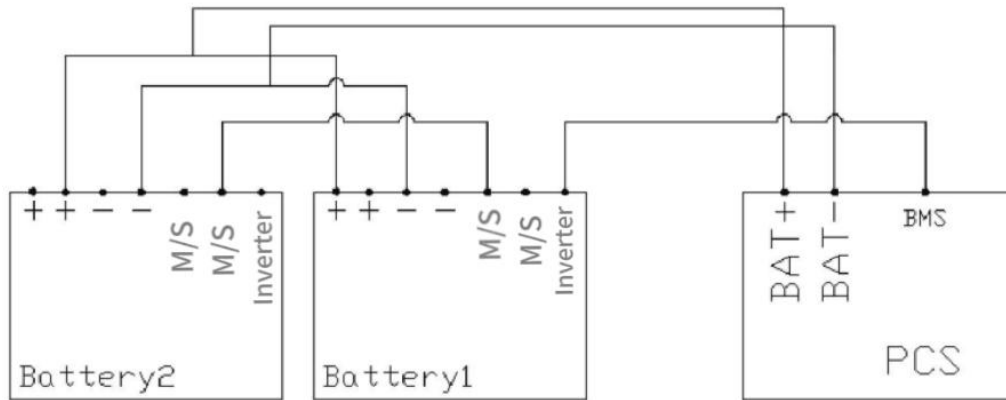

——— Positive power cable

——— Negative power cable

——— Communication cable

——— Ground wire
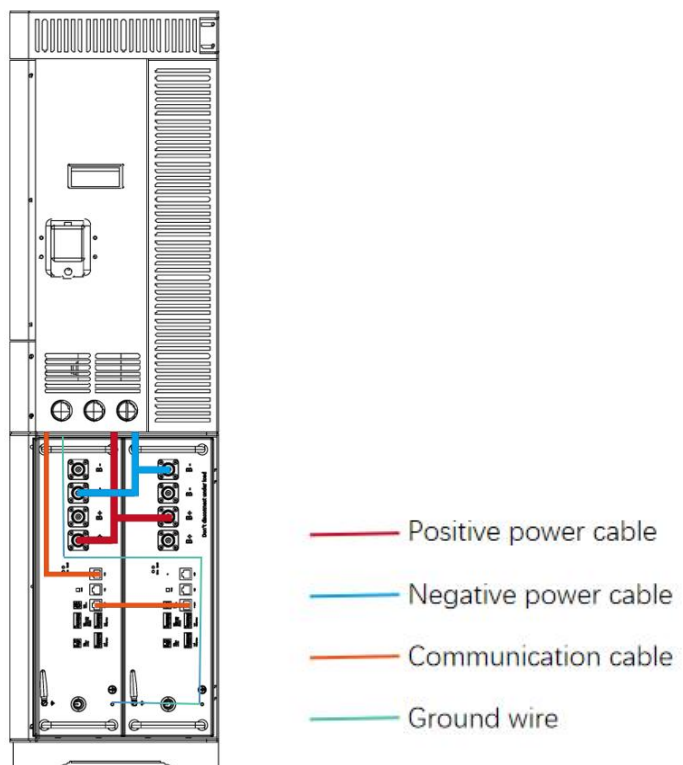
4. Electrical Connections and Commissioning

4.1 Battery Connection

Battery connection diagram

Note!

Connecting inverter port of the Battery 1 (master) to BMS port of PCS, M / S port used for connecting the Battery 1 (master) and Battery 2 (slave) together. Please check the battery manual for details.

BMS PIN Definition

Communication interface between inverter and battery is RS485 or CAN with a RJ45 connector.
The wiring sequence of the crystal head conforms to the 568B standard: orange white, orange, green white, blue, blue white, green, brown white and brown.
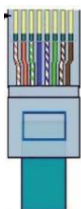
	PIN	1	2	3	4	5	6	7	8
CAN	Definition	X	X	X	BMS_CANH	BMS_CANL	X	X	X
Rs485	Definition	X	X	X	X	X	GND	BMS_485A	BMS_485B

4.2 Grid and Load Connection
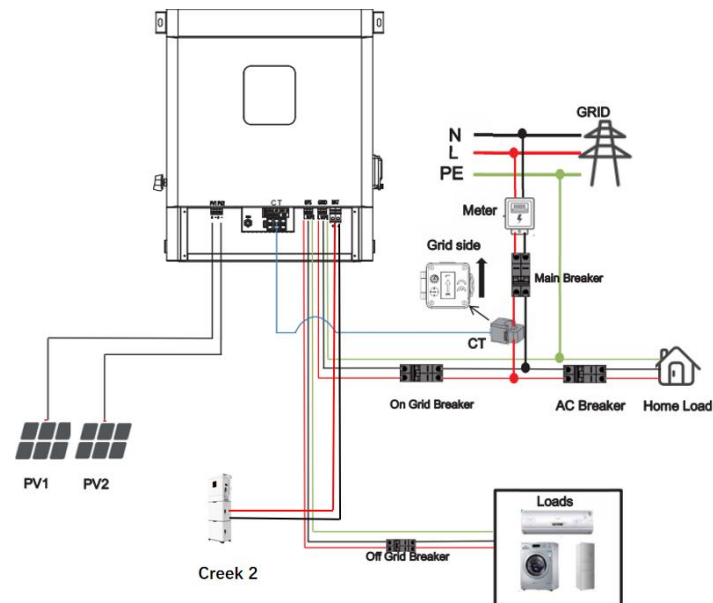
Electrical connection diagram

Hybrid inverter are designed for single phase grid. The Voltage is 220 / 230 / 240V, and the frequency is 50 / 60 Hz.

Other technical requests should comply with the requirement of the local public grid.

Table 1 Cable and Micro-breaker recommended

Model	All
Cable	5-6mm²
Micro-breaker	32A

Micro-breaker should be installed between inverter and grid, any load should not be connected with inverter directly.

Step1. Check the grid voltage.

1.1 Check the grid voltage and compare with the permissive voltage range (Please refer to technical data).

1.2 Disconnect the circuit board from all the phases and secure against re-connection.

Step2. Select suitable cables and cold-pressed terminals, remove the insulation layer of 18 mm at the end of the wire, and then press the cables and terminals with wire crimping pliers.

Step3. Connect the completed cable to the power grid and EPS interface, and tighten the screws.
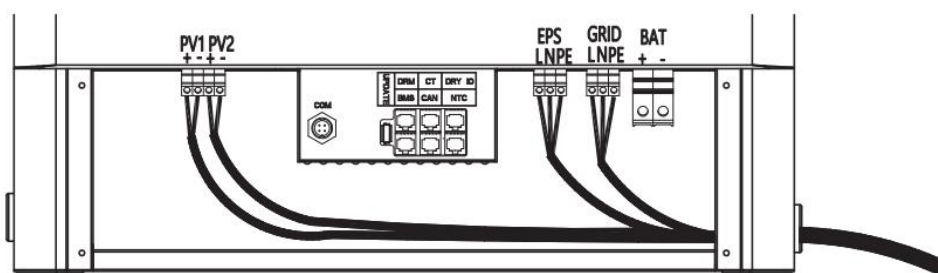
Cables compartment

4.3 PV Connection

Hybrid Inverter can be connected in series with 2-strings PV modules for 3kWp, 3.6kWp, 4kWp, 4.6kWp, 5kWp and 6kWp.

Select PV modules with excellent function and reliable quality. Open-circuit voltage of module arrays connected in series should be<Max. DC input voltage; operating voltage should be conformed to MPPT voltage range.

Max. DC Voltage Limitation

| Model	CFE Creek 2 3kW	CFE Creek 2 3.6kW	CFE Creek 2 4kW
	CFE Creek 2 4.6kW	CFE Creek 2 5kW	CFE Creek 2 6kW
Max. DC Voltage (V)	550		
MPPT Voltage Range (V)	125-500		

Warning!

- PV module voltage is very high, which already achieve dangerous voltage range, please comply with electric safety rules when connecting.

- Please do not make PV positive or negative together or to the ground!

PV cable Connection Steps:

1) Checking PV module, ensure the PV + and PV- ports of the PV string are correct.

2) Separate PV connector to ensure PV is in open circuit state.

3) Select suitable cables and cold-pressed terminals, remove the insulation layer of 18 mm at the end of the wire, and then press the cables and terminals with wire crimping pliers.

4) Connect the completed cable to the PV interface, and tighten the screws.

4.4 Communication Interface Definition
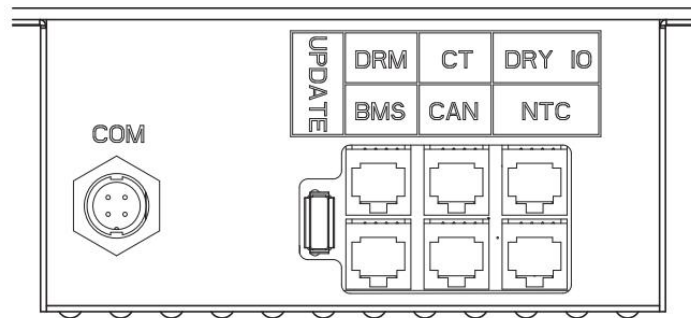
➢ BMS PIN Definition

Communication interface between inverter and battery is RS485 or CAN with a RJ45 connector. The wiring sequence of the crystal head conforms to the 568B Standard: orange white, orange, green white, blue, blue white, green, brown white and brown.
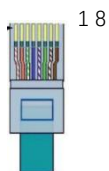
	PIN	1	2	3	4	5	6	7	8
CAN	Definition	X	X	X	BMS_CANH	BMS_CANL	X	X	X
Rs485	Definition	X	X	X	X	X	GND	BMS_485A	BMS_485B

➢ DRY_IO (RJ45 PIN) Definition

Communication interface between inverter and meter is Rs485 with a RJ45 connector.
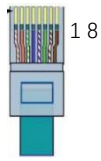
1	2	3	4	5	6	7	8
DRYO_1A	DROY_1B	DRYO_1C	DRYI_1	DRYI_1B	DRYO_2A	DRYO_2B	DRYO_2C

➢ DRM Connection

DRM is provided to support several demand response modes by emitting control signals as followed.

Note: Only PIN6 (DRM0) is available now, and other PIN functions are being developed.
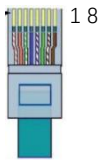
1	2	3	4	5	6	7	8
DRM1/5	DRM2/6	DRM3/7	DRM4/8	+5V	DRM0	GND	GND

4.5 Wi-Fi and GPRS Connection (Optional)

Inverter provides a Wi-Fi port which can collect data from inverter and transmit it to monitoring-website by Wi-Fi.

Diagram
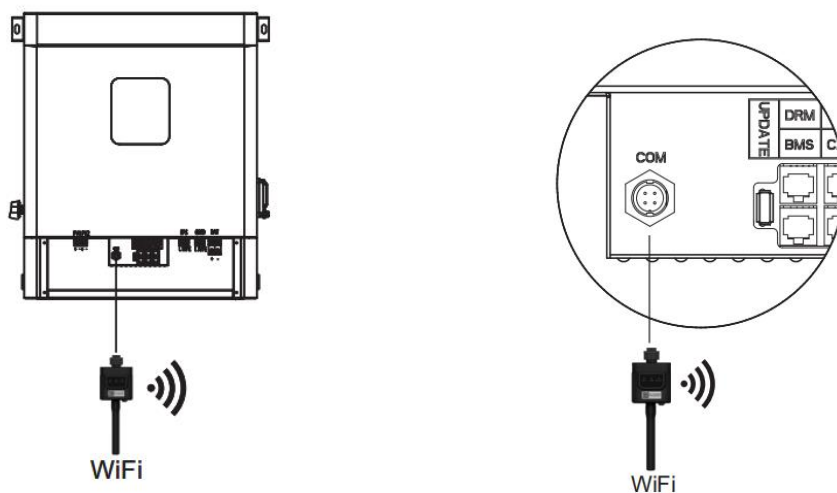
Step1. Plug WIFI into COM" port at the bottom of the inverter.

Step2. Establish the connection between the inverter and router.

Step3. Create a user account online. (Please check the WiFi user manual for more details).

GPRS Connection:

GPRS connection interface is consistent with WIFI interface, please refer to the GPRS user manual for detailed connection steps.
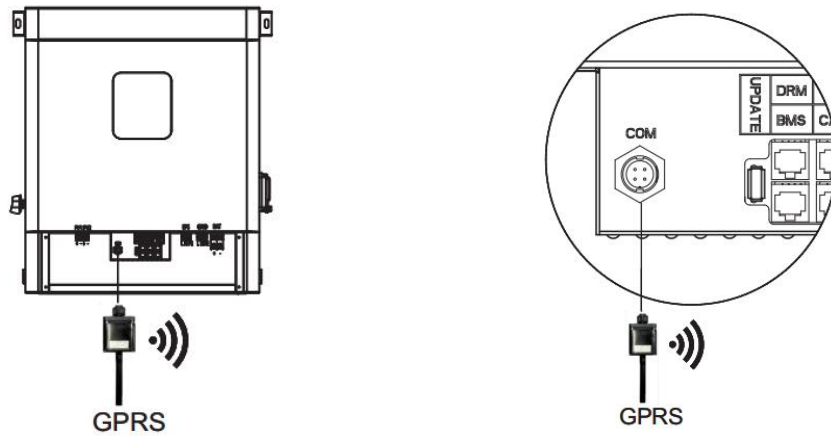
WIFI/GPRS PIN Definition

1	2	3	4

1	2	3	4
+5V	RS485_A	RS485_B	GND

4.6 Installation and Commissioning Steps

(1) Install the Creek, and set it by the wall / floor. (as in chapter 3).

(2) Install the batteries in the Creek's lower enclosure, and fixate them in place using screws.

(3) Connect the communication cable and the power cables for the Grid / PV. (as in chapter 4).

(4) Connect the batteries cables; PE, communication, and power cabling. (as in chapter 4 and the batteries manual).

(5) Set the batteries' DIP switches according to the battery manual.

(6) Operate the Creek by providing power from the grid not from the batteries.

(7) Operate the batteries as in the battery catalog. Start from the last slave battery to the master.

(8) On the Creek, operate the battery DC switch.

5. Setting

5.1 Control Panel
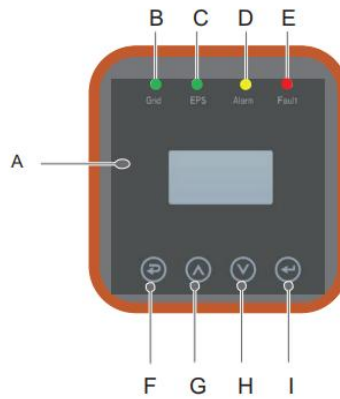
Object	Name	Description
A	LCD Screen	Display the information of the inverter.
B	Indicator LEDs	in green: The inverter is in grid mode. Off: The inverter is in not in grid mode.
C		in green: The inverter is in off-grid mode. Off: The inverter is in not in off-grid mode.
D		D in Yellow: The inverter is in Warning. Off: The inverter has no Inverter Warning
E		in red: The inverter is in fault status. Off: The inverter has no errors.
F	Function Button	Return: Return from current interface or function.
G		Up: Move cursor to upside or increase value.
H		Down: Move cursor to downside or decrease value.
I		Enter: Confirm the selection.

5.2 Instructions for LED Indicator

	Grid (Green)	EPS (Green)	Alarm (Yellow)	Fault (Red)
Initialization	off	off	off	off
Stand-by	off	off	off	off
Grid mode	on	off	off	off
Off-Grid	on	on	off	off
Bypass of mains	off	on	on	off
Fault	off	off	off	on

5.3 Instructions for the Use of Three Main Options

For example, before selecting the mode, you can set it up according to the local power grid, PV input mode and battery type.

Power Grid

```
Circular Display   Press Enter                   Select 1:Set up
Interface      ───────────────►    User      ───────────────►      Enter
                                            Press Enter

                                            Default password
                                            Press 000000
                                            Press UP/DOWN
                                            Adjust the figure
                                                                      │
                                                                      ▼
Circular Display   Press Enter     Choose       Press Enter
Button         ◄───────────────  according to ◄───────────────     3: RID STD
                                  local power
                                    grid
```

PV input mode

```
Circular Display   Enter Password                Select 1:Set up
Interface      ───────────────►    User      ───────────────►    SYS SETTING
                   Press                       Press Enter
                                                                      │
                                                                      ▼
                   Select         Press Enter
                 independent   ◄───────────────                  Select PV input
```

Battery Type

```
┌──────────────┐   Enter Password    ┌──────────────┐   Select 1:Set up   ┌──────────────┐
│   Circular   │ ──────────────────▶ │              │ ──────────────────▶ │              │
│   Display    │                     │     User     │                     │ 2. BAT SETTING│
│   Interface  │     Press Enter     │              │     Press Enter     │              │
└──────────────┘                     └──────────────┘                     └──────────────┘
                                                                                 │
                                                                            Press│
                                                                            Enter│
                                                                                 ▼
┌──────────────┐                     ┌──────────────┐
│Set corresponding│   Press Enter    │              │
│battery type, press│ ◀───────────── │  1: BAT TYPE │
│enter to confirm │                  │              │
└──────────────┘                     └──────────────┘
```

5.4 LCD Interface

5.4.1 Error information

Interface	Description
ERROR NO. 🔒 **02: Bat Disconnect** **27: BMS Comm.fail**	Numbers represent error codes and text is error information. Refer to Chapter 6 for specific contents. **NOTE:** When there is a lock mark 🔒 when inverter screen is on circular status info display, you can press enter to pause or unpause the screen scrolling. You can identify screen-locking feature by the lock in the top-right corner. Note that locking the screen still allows you to go through the status info screen but not change any parameters. Note: The errors screen will stop you from scrolling when you are in the lock-screen mode.

5.4.2 System setting1

Interface	Description
SYSTEM1 **STATE: SELF CSM** **GRID: US-CA** **PV I/P: PARALL**	**State:** Setting of the whole machine working mode. Including: SELF CONSUME, PEAK SHIFT and BAT PRIORITY. Refer to Chapter 1.3 for specific contents. **Grid standard:** Displays the grid standard actually set. **PV input mode:**The display value is the setting value of PV **input type：** Including: INDEPENDANT, PARALLEL, CV. Settings and explanations are provided in section 5.5.4.4

5.4.3 System setting2

Interface	Description
SYSTEM2 **BMS Com：CAN Anti** **Reflux: DISA** **DOD： 80%**	**BMS Com:** Battery Management System communication mode. Including: CAN, RS485. **Anti Reflux:** Displays Whether Inverter isn't allowed to generate electricity to the Grid. Including: DISABLE, ENABLE. **DOD:** Depth of battery discharge. When the battery discharge exceeds the DOD parameter, the inverter generates a low voltage or under voltage alarm,and the battery.

5.4.4 System setting3

Interface	Description
SYSTEM3 **EPS ENABLE: ENABLE**	**EPS ENABLE:** When the Grid and PV are powered off, Enable the battery to supply power to the load, default option is enabled.

5.4.5 PV1 Input display interface

Interface	Description
PV2 INPUT **VOLT: 300 V** **CURR: 10.00 A** **Power: 3000 W**	PV2 input real-time voltage, current and power.

5.4.6 PV2 Input display interface

Interface	Description
PV2 INPUT **VOLT: 300 V** **CURR: 10.00 A** **POWER: 3000 W**	PV2 input real-time voltage, current and power.

5.4.7 DC Voltage interface

Interface	Description
DC VOLTAGE **BUS： 384 V**	**BUS:** Real-time voltage of bus capacitor of the machine.

5.4.8 Battery interface

Interface	Description
BATTERY **VOLT: 50 V** **CURR: 10.00 A** **STA: C D F**	Battery real-time voltage. Battery real-time current. **STA:** Battery status. **C:** Indicates that the battery is rechargeable (From the BMS) **D:** Indicates that the battery can discharge (From the BMS) **F:** The battery requests a forcible charge (From the BMS)

5.4.9 Battery information

Interface	Description
BATTERY INFO **TYPE: Lithium** **TEMP: 26℃** **SOC: 30%**	**TYPE:** Battery type:(lead acid, lithium battery) **TEMP:** Battery temperature. **SOC:** Percentage of battery surplus capacity from the BMS

5.4.10 Battery Parameter interface

Interface	Description
BMS PRMETER **CHAR VOL: 0.0V** **CHARGE: 50A** **DISCHA: 50A**	**CHAR VOL:** Battery charging voltage. **CHARGE:** Battery charging current. If the inverter is in parallel state and uses Common battery setting, the charging current on the master is equal to the value uploaded by the BMS divided by the number of parallel machines. The charging current on the slave is equal to the value uploaded by the BMS and is compared with the value set on the master, the minimum value is taken and divided by the number of parallel machines. **DISCHA:** Battery discharging current. (The parallel state is the same as the charging value algorithm)

5.4.11 Grid output

Interface	Description
GRID OUTPUT **VOLT: 0.0V** **CURR: 0.00A** **FREQ: 0.00Hz**	**VOLT:** Gird real-time voltage. **CURR:** CT real-time current. **FREQ:** Grid real-time frequency.

5.4.12 INV output

Interface	Description
INV OUTPUT **VOLT: 0.0V** **CURR: 0.00A** **FREQ: 0.00Hz**	**VOLT:** INV real-time voltage. **CURR:** INV real-time current. **FREQ:** INV real-time frequency.

5.4.13 EPS LOAD

Interface	Description
EPS LOAD **VOLT:** 0.0V **CURR:** 0.0A **PERCENT:**0.0%	**VOLT:** LOAD real-time voltage. **CURR:** LOAD real-time current. **PERCENT:** LOAD real-time percentage.

5.4.14 POWER

Interface	Description
POWER **INV:** 0.0W **GRID:** 0.0W **HOMELOAD:** 0.0W	**INV:** INV power. **GRID:** Grid power. **HOMELOAD:** Power of grid-side load

5.4.15 POWER

Interface	Description
POWER **PV I/P:** 0.0W **EPSLOAD:** 0.0W **BAT:** 0.0W	**PV I/P:** PV power. **LOAD:** LOAD power. **BAT:** BAT power.

5.4.16 Temperature

Interface	Description
TEMPERATURE **INVER:** 0.0℃ **DCDC:** 0.0℃ **INSIDE:** 0.0℃	**INVER:** INV Temperature. **DCDC:** DCDC Temperature. **INSIDE:** Internal ambient temperature of the machine.

5.4.17 State

Interface	Description
STATE **SYS: STANDBY** **INV: STANDBY** **DCDC: STANDBY**	**System information:** Display complete machine status **information, including:** INIT, STANDBY, PV GRID, BAT GRID, BYP, AC BAT CHG, HYBRID POW etc. **INIT:** Initialization **PV GRID:** PV generates electricity for the grid. BAT GRID: Battery discharges to the power grid. **BYP:** Bypass band load. **AC BAT CHG:** The grid charges the battery **HYBRID POW:** Hybrid power supply (Multiple Power Supply). **INV:** Displays the inverter status information, including: STANDBY, OFF GRID, GRID, OFF GRID PL, INV TO PFC. **GRID:** Grid connected state. **OFF GRID PL:** Working state off-grid conversion to grid connection. **INV TO PFC:** Status of power by public grid turn into on grid working mode. **DCDC:** Displays charging and discharging status information, including: STANDBY, CHARGE, DISCHARGE.

5.5 Settings

This map shows the device menu and sub-menu. This may be different from one device to another.

1、SETUP
- 1、SYS SETTING
  - 1、WORK MODE
    - 1、SELF CONSUME
    - 2、PEAK SHIFT
    - 3、BAT PRIORITY
  - 2、EPS ENABLE
  - 3、BAT WAKE-UP
  - 4、REMOTE CTRL
  - 5、START DELAY
  - 6、PV INPUT
    - 1、INDEPENDANT
    - 2、PARALLEL（Test mode）
    - 3、CV（Test mode）
  - 7、ANTI REVERSE
- 2、BAT SETTING
  - 1、BAT TYPE
    - 1、DC-SOURCE
    - 2、LEAD-ACID
    - 3、Lithum-48V
  - 2、DISC-DEPTH
  - 3、CHARG-CURR
  - 4、BAT-COMM
    - 1、RS485
    - 2、CAN
- 3、GRID STD
- 4、RUN SETTIG
  - 1、REACT MODE
    - 1、POWER FACTOR
    - 2、REACT POWER
    - 3、QU WAVE
    - 4、QP WAVE
  - 2、GRID POWER
  - 3、DISC POWER
  - 4、VAC-MIN
  - 5、VAC-MAX
  - 6、FAC-MIN
  - 7、FAC-MAX
- 5、458 ADDRESS
- 6、BAUD-RATE
  - 1、2400bps
  - 2、4800bps
  - 3、9600bps
- 7、LANGUAGE
  - 1、中文
  - 2、ENGLISH
- 8、BACKLIGHT
- 9、DATE/TIME
- 10、CLEAR REC
- 11、PASSWORD
- 12、MAINTENANCE
- 13、FCTRY RESET

2、INQUIRE
- 1、INV MODULE
- 2、MODULE SN
- 3、FIRMWARE
- 4、RECORD
- 3、STATISTIC
  - 1、TIME STAT
  - 2、CONNE TIMES
  - 3、PEAK POWER
  - 4、E-TODAY
  - 5、E-MONTH
  - 6、E-YEAR
  - 7、E-TOTAL

The arrow " → " means that this is the default setting.

5.5.1 USER

Interface	Description

USER
→ 1: SETUP
   2: INQUIRE
   3: STATISTIC
	SETUP: Press Enter to user settings interface.
	
	INQUIRE: Query machine model, serial number, software version.
	
	STATISTIC: View machine run statistics.

5.5.2 SET Password

Interface	Description
PASSWORD **INPUT: XXXXX**	Enter the password required for setting. The default password is "00000". Press the Up or Down keys to adjust the number, press the Enter key to move the cursor forward, and press the Return key move the cursor backward.

5.5.3 Setup

Interface	Description

SETUP
→ 1: SYS SETTING
   2: BAT SETTING
   3: GRID STD
   4: RUN SETTING
   5: 485ADDRESS
   6: BAUD RATE
   7: LANGUAGE
   8: BACKLIGHT
   9: DATE/TIME
   10: CLEAR REC
   11: PASSWORD
   12: MAINTENANCE
   13: FCTRY RESET
   14: AUTO TEST
   15: PARALLEL
   16: ADVANS
	This interface is used for various information inquiry options.
	
	Press the Up/Down button to make the corresponding selection.
	
	Press Enter button to enter the selected menu.
	
	Press Return button return to the user interface.

5.5.4 System setting

5.5.4.1 System setting

Interface	Description
SYS SETTING →1: WORK MODE 2: EPS ENABLE 3: BAT WAKE-UP 4: REMOTE CTRL 5: START DELAY 6: PV INPUT 7: Anti Reverse 8: HOME LOAD 9: BMS Aux MANAGE 10: Zero Export Power 11: BAT LOW CAP STANDBY	Enter the password required for setting. The default password is "00000". Press the Up or Down keys to adjust the number, press the Enter key to move the cursor forward, and press the Return key move the cursor backward.

5.5.4.1.1 Work mode

Interface	Description
WORK MODE → 1: SELFCONSUME 2: PEAK SHIFT 3: BAT PRIORITY	This interface is used to select the working mode. Press Return button return to setting interface.

5.5.4.1.2 Peak shift work time

Interface	Description
WORK MODE 1: SELFCONSUME →2: PEAK SHIFT 3: BAT PRIORITY	This interface is used to select the working mode. Press Return button return to setting interface. Select the peak clipping and valley filling mode, you also need to set the charge and discharge time It's allowed to set Three charging and discharging periods.
WORK TIME →1: TIME 1 2: TIME 2 3: TIME 3	When setting the time, ensure that the time of the inverter is the local time. Press Enter to enter the next menu. This parameter is set for one day. If the specified time conflicts, the first time is used as the main time perform. If the three time ranges do not conflict, the three time ranges are executed in sequence.
CHAG START1 00:00 CHARGE END1 00:02 DISC START1 00:03 DISCHA END1 23:59	This interface is used to adjust the time of peak load shifting. Press Up/Down button to move the corresponding options. Press Enter to enter the selected menu. Press Return button to return to the working mode interface.

5.5.4.2 EPS enable

Interface	Description
EPS ENABLE 1: DISABLE →2: ENABLE	When the Grid and PV are powered off, Enable the battery to supply power to the load, default option is enabled.

5.5.4.3 Battery wake-up

Interface	Description
WAKE-UP EN →1: DISABLE 2: ENABLE	When the battery is low and the battery relay has been disconnected, the inverter will send instructions to the battery forcibly close relay by BMS, and the inverter will charge. The default option is disabled. (Partial battery support) If you want to use this feature, please consult the battery brand supported by the dealer. Use it only when the battery is too low. After the battery wakes up successfully, please turn off the function, otherwise it will affect the normal operation of the machine.

5.5.4.4 PV INPUT MODE

Interface	Description
INPUT MODE →1.INDEPENDENT 2.PARALLEL 3.CV	Setup of PV Input mode. **INDEPENDENT:** The default Settings **PARALLEL:** This feature is for test use only, not customer use. **CV:** This feature is for test use only, not for customer use. The factory setting by default is Independent, when parallel input is set to be stand-alone mode, PV power will be imbalanced.

5.5.4.5 Anti Reflux

Interface	Description
Anti Reverse →1.DISABLE 2.ENABLE	**Anti Reflux :** Whether Inverter isn't allowed to generate electricity to the Grid. The default option is disabled. It's means inverter allowed to generate electricity to the Grid.

5.5.4.6 HOME LOAD

Interface	Description
HOME LOAD →1.DISABLE 2.ENABLE	**ENABLE:** Statistics on the power consumption of grid-loads side. CFE BMS do not need Aux. management

5.5.4.7 BMS Aux MANAGE

Interface	Description
BMS Aux MANAGE →1.DISABLE 2.ENABLE	**ENABLE:** When the BMS of the battery does not have a disable charge or discharge function, the inverter will automatically reduce the power to avoid overcharging or over discharging the battery. CFE BMS do not need Aux. Management.

5.5.4.8 Zero Export Power

Interface	Description
Zero Export Power **INPUT: +000W**	For zero export power, it tells grid output power. recommend to set it as +20w ~ 100w to ensure the hybrid inverter won't feed power to grid.(-20W means to generate electricity into the grid; +20W means to draw electricity from the grid)

5.5.4.9 BAT LOW CAP STANDBY

Interface	Description
BAT LOW CAP STANDBY →1.DISABLE 2.ENABLE	**ENABLE:** When there is no photovoltaic power supply at night, and the battery reports low voltage or low capacity, the machine will enter the standby state only the mains power to supply power to the load. The default option is enable.

5.5.4.10 NO BAT LV ALARM

Interface	Description
NO BAT LV ALARM 1.Enable →2.Disable	**ENABLE:** When the battery voltage or SOC falls below the set value, the inverter will not display an alarm. The default option is disable.

5.5.5 BAT SETTING

5.5.5.1 BAT SETTING

Interface	Description
BAT SETTING →1.BAT TYPE 2.DISC-DEPTH 3.CHARG-CURR 4.BAT-COMM	This interface is used to select battery parameters. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu; Press Return button to return to setting interface.

5.5.5.1.1 BAT TYPE

Interface	Description
BAT TYPE →1.DC-SOURCE 2.LEAD-ACID 3.Lithium	This interface is used to select battery type. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu. Select the LEAD-ACID enter button to enter LEAD-ACID interface; Set 1 to test and disable the setting.

5.5.5.1.1.1 Lead-acid battery parameter

Interface	Description
LEAD-ACID **1.CHARG-VOLT** **2.BAT END VOLT** **3.BAT OVP** **4.BAT CAP** **CHARGE VOLT** **INPUT: 55.0** **UNIT: V**	This interface is used to select LEAD-ACID battery parameter. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu; 1. Charge voltage 2. BAT end voltage 3. BAT over voltage This interface is used to set the lead acid battery charging voltage. (The input value ranges from 40 to 58)

Interface	Description
BAT END VOLT **INPUT: 45.0** **UNIT: V** **BAT OVP** **INPUT: 55.0** **UNIT: V** **BAT CAP** **INPUT: 0450** **UNIT: AH**	This interface is used to set the lead acid battery discharging voltage. (The input value ranges from 40 to 51V) Discharge cut-off voltage, as recommended by the battery manufacturer. This interface is used to set the lead acid battery Charge protection voltage. (The input value ranges from 50 to 59.5) Charge protection voltage, as recommended by the battery manufacturer. This interface is used to set the lead acid Battery capacity. It is related to the input power. (The input value ranges from 50 to 1000) The battery capacity setting will affect the maximum charging current, for example, set 100Ah, the maximum charging current is 100A*0.2=20A

5.5.5.2 BAT-COMM

Interface	Description
BAT-COMM **1.RS485** →**2.CAN**	This interface is used to select battery communication BMS type. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu. The default option is CAN.

5.5.6 Grid standard

Interface	Description
GRID STD **1.AU** **2.AU-W** **3.NZ** **4.UK** **5.PK** **6.KR** **7.PHI** →**8.CN** **9.US-CA** **10.THAIL** **11.ZA** **12. CUST** **13. POL** **14. EN 50549** **15. VDE 4105** **16. JPN** **17. ITA** **18. SLO** **19. CZE** **20. SWE** **21. HU** **22. SK** **23. AT** **24. BE**	This interface is used to select Grid standard. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu. 1:AU— Australia 2:AU-W— Western Australia 3:NZ — New Zealand 4: UK— United Kingdom 5:PK — PAKISTAN 6:KR— Korea 7: PHI—Philippines 8:CN— China 9:US-CA—America 10: THAIL—THAILAND 11:ZA—South Africa 12: CUSTOM—User defined 13: POL— Poland 14: EN50549 15: VDE4105 16:JP— Japan 17: ITA—Italy 18: SLO-Slovinia 19: CZE – Czech Republic 20: SWE - Sweden 21: HU – Hungary 22: SK - Slovakia 23: AT – Austria 24: BE - Belgium

Note: Country list may differ from one device to another, this is for illustration.

5.5.7 RUN SETTING

5.5.7.1 RUN SETTING

Interface	Description
RUN SETTING **1.REACT MODE** → **2.GRID POWER** **3.DISC POWER** **4.PV POWER** **5.VAC-MIN** **6.VAC-MAX** **7.FAC-MIN** **8.FAC-MAX** **9.ACTIVE REP**	This interface is used to select run setting. Press Up/Down button to move corresponding options; Press Enter button to enter the selected menu. Factory default Settings. Please consult the distributor for modification.

5.5.7.2 REACT MODE

Interface	Description
RUN SETTING → **1.REACT MODE** **2.GRID POWER** **3.DISC POWER**	REACT MODE: Reactive mode, including: POWER FACTOR, REACT POWER, QU WAVE, QP WAVE.(For specific country if required by the local grid.)
REACT MODE **1.POWER FACTOR** → **2.REACT POWER** **3.QU WAVE** **4.QP WAVE**	QU WAVE: Voltage-reactive curve. QP WAVE: Active power-reactive power curve. (These two functions are not available on the screen, please contact the distributor if you need to use them.)
POWER FACTOR **INPUT: C1.00**	Power Factor: The input value should range between L0.80 and or C0.80.
REACT POWER **INPUT: +00%**	REACT POWER: Reactive power control The input value should range between -60% and +60%, which varies with the standard.

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5.5.7.3 GRID POWER

Interface	Description
GRID PERCENT **INPUT: 100%**	The input value is power percent of grid.

5.5.7.4 DISCHARGE POWER

Interface	Description
DISC PERCENT **INPUT: 100%**	The input value is power percent of battery discharge.

5.5.7.5 PV POWER

Interface	Description
PV PERCENT **INPUT: 100%**	The input value is power percent of PV.

5.5.7.6 VAC-MIN

Interface	Description
GRID VOLT LOW **INPUT: 150** **UNIT: V**	The input value of Grid low voltage. It is valid when grid mode chooses custom.

5.5.7.7 VAC-MAX

Interface	Description
GRID VOLT HIGH **INPUT: 280** **UNIT: V**	The input value of Grid high voltage. It is valid when grid mode choose custom.

5.5.7.8 FAC-MIN

Interface	Description
GRID FREQ **LOW INPUT: 57.0** **UNIT: Hz**	The input value of Grid low frequency. It is valid when grid mode choose custom.

5.5.7.9 FAC-MAX

Interface	Description
GRID FREQ HIGH **INPUT: 63.0** **UNIT: Hz**	The input value of Grid high frequency. It is valid when grid mode choose custom.

5.5.7.10   ACTIVE REF

Interface	Description
ACTIVE Type **1.PWR-VOLT RES** → **2.PWR-FREQ RES** **3.PFC-VOLT RES** **4.PFC-FREQ RES** **5.Anti-Island** **6.Leak Current** **7.Insul Detect**	**1. PWR-VOLT RES:** Generation voltage response. When the grid voltage is abnormal, the active power is limited, and the function is enabled when required by the national grid standard. **2. PWR-FREQ RES:** Generation frequency response. When the power grid frequency is abnormal, the active power will be limited, and the function will be enabled if required by the national power grid standard. **3. PFC-VOLT RES:** Charge voltage response. When the grid voltage is abnormal, the charging power will be limited, and the function will be enabled if required by the national grid standards. **4. PFC-FREQ RES:** Charge frequency response. When the power grid frequency is abnormal, the charging power will be limited, and the function will be enabled if required by the national power grid standard. 2. **Anti-Island:** Anti-Islanding (The default option is enabled) When the grid goes down, inverter will detect the loss of power and disconnect from the grid within milliseconds. It prevents your solar panels from feeding electricity into a downed power line. 3. **Leak Current:** Leak current detect (The default option is enabled). 4. **Insul detect:** Insulation detect (The default option is enabled). When the insulation detection function is enabled in the grid-connected state, the insulation detection is performed once a day when the photovoltaic energy comes in, and the inverter switches to the By-pass band load. If the inverter is off-grid, the output will be disconnected during insulation detect and the load will stop working.

5.5.8 485 Address

Interface	Description
485 ADDRESS **INPUT: 1**	This interface is used to select 485 address.

5.5.9 485 BAUD RATE

Interface	Description
SELECT →1.2400 bps 2.4800 bps 3.9600 bps	This interface is used to select 485 baud rate.

5.5.10 LANGUAGE

Interface	Description
LANGUAGE 1.Chinese →2.English	This interface is used to select language.

5.5.11 BACKLIGHT

Interface	Description
LIGHT TIME INPUT: 20 UNIT: SEC	This interface is used to set light time.

5.5.12 DATE/TIME

Interface	Description
DATE/TIME DATE: 2021 - 12-25 TIME: 22:30:00 WEEK: Saturday	This interface is used to set date and time.

5.5.13 CLEAR REC

Interface	Description
DEL REC →1.CANCEL 2.CONFIRM	This interface is used to clear operation history.

5.5.14 PASSWORD

Interface	Description
PASSWORD **OLD: XXXXX** **NEW: XXXXX** **CONFIRM: XXXXX**	This interface is used to set password.

5.5.15 MAINTENANCE

Interface	Description
PASSWORD **INPUT: XXXXX**	This interface is used to enter maintenance.

5.5.16 FCTRY RESET

Interface	Description
FACTORY RESET →**1.CANCEL** **2.CONFIRM**	This interface is used to reset the inverter.

5.5.17 ADVAN SET

Interface	Description
ADVAN SET →**1.Mode Set** **2.Advan Ctrl** **3.TOU Set**	The hybrid inverter can be programmed to control how and when to use grid power. The advanced mode allows management of flexible loads and time-of-use billing. **ADVAN SET:** Advanced setting include: mode setting, advanced controls, TOU setting (time-of-use setting)

5.5.17.1 Mode Set

Interface	Description
Mode Set → 1.Disable 2.Sell first 3.SFC. Sell EN 4.SFC. Sell Dis	There are three advanced mode available: Sell First, SFC. Sell EN, SFC. Sell Dis. **Sell First:** First consider selling electricity to the grid. In this mode the anti-reflux setting is automatically disabled. The users can use this mode to sell back surplus solar power to grid. If time of use is enabled, the battery power can also be sold to grid. **SFC. Sell EN:** Self-consumed mode electricity selling enable. In this mode, Solar energy provides power to the loads as first priority, if solar energy is sufficient to power all connected loads, solar energy excess power will provide to charge battery, **and then redundant power will feed to grid**. (See 1.3 Work Modes for details) **SFC. Sell Dis:** Self-consumed mode electricity selling disable. In this mode, the CT limiters should be installed in the input of the inverter's grid port. The hybrid inverter will not sell power to grid. Users can use this feature to ensure that the inverter does not feed power back to the grid.

5.5.17.2 Advan Ctr

Interface	Description
Advanced Control → 1.Grid Chg En 2.TOU En 3.Only PV Chg TOU Set **Start:** 00:00 **End:** 00:00 **Power:** 00:00 **Soc:** 00:00	There are also some attributes of these mode: Global Grid Charge Enable, Time-of-use Enable, PV Charge Only. **Global Grid Charge Enable:** It is a high-level control attribute of grid charge enable. If time of use function is disabled, this attribute is used to judge whether or not to charge the battery by grid. If time of use function is enabled, the battery can be charged by grid only when the time slot grid charge attribute is enabled. **Time-of-use Enable:** There are 6 slots which can be programmed. If grid charge enables, the grid is used to power the load and charge the battery to target SOC at specific bat power attribute value. If selling electricity to the grid enable, the battery will discharge to target SOC at specific battery power attribute value. **PV Charge Only:** If user don't want to use grid to charge the battery in any time, please enable this attribute. The photovoltaic energy will be used first for the load, and then the excess energy will be used to charge the battery. If the photovoltaic energy is insufficient, the battery will power the load.

5.6 INQUIRE

5.6.1 INQUIRE

Interface	Description
INQUIRE → 1.INV MODULE 2. MODULE SN 3.FIRMWARE 4.RECORD 5.DIAGNOS	Press Up/Down button to move corresponding options; Press Enter button to jump to the selected menu. Press Return button to return to another interface.

5.6.1.1 INV MODULE

Interface	Description
MODEL 6K	This interface shows inverter model.

5.6.2 MODULE SN

Interface	Description
S / N GUID:XXXXXXXX XXXXXXXXXXXXX SN: FXXXXXXXXXXX	This interface shows module SN.

5.6.3 FIRMWARE

Interface	Description
FIRMWARE ARM: V1. XX.XX DSP: V1.XX.XX	This interface shows Software version.

5.6.4 RUNNING RECORDS

Interface	Description
REC (01) **02: Bat disconnect** **UP: 12-25 23:00** **DOWN:**	This interface show running records.

5.6.5 DIAGNOSE

Interface	Description
DIAGNOSE 000000 000000 000000 000000 000000 000000	Factory internal use.

5.7 STATISTIC

5.7.1 STATISTIC

Interface	Description
STAT → **1.E-TODAY** **2.E-MONTH** **3.E-YEAR** **4.E-TOTAL**	This interface shows inverter operation statistic. 1. Displays statistic for the day (kWh). 2. Displays statistic for the month (kWh). 3. Displays statistic for the year (kWh). 4. Displays statistic of the inverter (kWh).

Note:

1. E-TODAY/MONTH/YEAR/TOTAL INPUT PV / GRID (Consume) / BATD (Battery discharge) OUTPUT BATC (Battery charge) / GRID (Generation) / CNSUM (Load consume).

2. If the inverter shut down before 24:00 on that day, and the day statistic will not be stored.

5.8 Autotest Fast

1. SETUP	Press the Enter button and default password 00000
↓	
14．AUTO TEST	Press the Enter button to start
Testing 59.S1...	
↓	Wait
Test 59.S1 OK!	
↓	Wait
Testing 59.S2...	
↓	Wait
Test 59.S2 OK!	
↓	Wait
Testing 27.S1...	
↓	Wait
Test 27.S1 OK!	
↓	Wait
Testing 27.S2...	
↓	Wait
Test 27.S2 OK!	
↓	Wait
Testing 81>S1	
↓	Wait
Test 81>S1 OK!	
↓	Wait
Testing 81>S2...	
↓	Wait
Test 81>S2 OK!	
↓	Wait
Testing 81<S1...	
↓	Wait
Test 81<S1 OK!	
↓	Wait
Testing 81<S2...	
↓	Wait
Test 81<S2 OK!	
↓	Wait
Auto Test OK!	
↓	
59.S1:228V 902ms	
↑ ↓	Press the up/down button to page through the test results
59.S2:229V 204ms	

↑ ↓	Press the up/down button to page through the test results
27.S1:228V 408ms	
↑ ↓	Press the up/down button to page through the test results
27.S2:227V 205ms	
↑ ↓	Press the up/down button to page through the test results
81>.S149.9Hz 103ms	
↑ ↓	Press the up/down button to page through the test results
81>.S249.9Hz 107ms	
↑ ↓	Press the up/down button to page through the test results
81<.S150.0Hz 105ms	
↑ ↓	Press the up/down button to page through the test results
81<.S250.1Hz 107ms	

Object	Description
27.S1	Under voltage protection
27.S2	Under voltage protection
59.S1	Over voltage protection
59.S2	Over voltage protection
81<S1	Under frequency protection
81<S2	Under frequency protection
81>S1	Over frequency protection
81>S2	Over frequency protection

6. Fault diagnosis and solutions

The inverter is easy to maintain. When you encounter the following problems, please refer to the Solutions below, and contact the local distributor if the problem remains unsolved. The following table lists some of the basic problems that may occur during the actual operation as well as their corresponding basic solutions.

Fault diagnosis table

Content	Codes	Explanation	Solutions
Dischg Over Cur	00	Battery discharge over current. When the battery is loaded, the load is too large.	(1) Nothing needs to do, Wait one minute for the inverter to restart. (2) Check whether the load is in compliance with the specification. (3) Cut off all the power and shut down all the inverter; disconnect the load and plug in to restart inverter, then check.
Over Load	01	The load power is greater than other power (PV, BAT) .	(1) Check whether the load is in compliance with the maximum power of the inverter. (2) Cut off all the power and shut down all the inverter; disconnect the load and plug in to restart inverter, then check whether the load is short circuited if the fault has been eliminated. (3) Contact customer service if error warning continues .
Bat Disconnect	02	Battery Disconnect. (Battery voltage not identified)	(1) Check whether the battery is connected. Check if battery wiring port is open circuited. (2) Contact customer service if error warning continues .
Bat Under Vol /Bat Under Capacity	03	Battery voltage/SOC is lower than the set value. Both off grid and on grid discharge are forbidden.	(1) Verify the battery voltage is within operating range. (2) If the battery voltage is too low, charge using the PV or grid. (3) Battery under capacity , it is a normal warning. When the battery capacity is not sufficient . (SOC<100%-OFFGRID DOD)

Bat Low Volt/ Bat Low capacity	04	Battery voltage/SOC is lower than the set value. On grid discharge is forbidden.	(1) Battery Low that setting capacity. (SOC<100%-DOD) (2) Check the battery capacity or voltage .
Bat Over Vol	05	The battery voltage is over than the Inverter maximum voltage.	(1) Verify the battery voltage is within operating range. (2) Restart the inverter and wait until it functions .
Grid over vol	06	Grid voltage is abnormal.	(1) Check if the grid is abnormal. (2) Restart the inverter and wait until it functions normally. (3) Contact customer service if error warning continues .
Grid over vol	07		
Gfci low freq	08	Grid Frequency is abnormal.	(1) Check if the grid is abnormal. (2) Restart the inverter and wait until it functions normally. (3) Contact customer service if error warning continues.
Gfci low freq	09		
Gfci over	10	Inverter GFCI exceeds standard.	(1) Check PV string for direct or indirect grounding phenomenon. (2) Check peripherals of inverter for current leakage. (3) Contact the local inverter customer service if fault remains insoluble.
Bus under vol	13	BUS voltage is lower than normal.	(1) Check the input mode setting is correct. (2) Restart the inverter and wait until it functions normally. (3) Contact customer service if error warning continues.
Bus over vol	14	BUS voltage is over maximum value.	(1) Check the input mode setting is correct. (2) Restart the inverter and wait until it functions normally.
Inv over cur	15	The inverter current exceeds the normal value.	Restart the inverter and wait until it functions normally.

Chg over cur	16	Battery charge current over than the Inverter maximum voltage.	Restart the inverter and wait until it functions normally.
Inv under vol	18	INV voltage is abnormal.	(1) Check if the INV voltage is abnormal. (2) Restart the inverter and wait until it functions normally. (3) Contact customer service if error warning continues .
Inv over vol	19		
Inv Freq Abnor	20	INV frequency is abnormal.	(1) Check if the INV frequency is abnormal. Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
Igbt temp high	21	The inverter temperature is higher than the allowed value .	Cut off all the power of the inverter and wait one hour, then turn on the power of the inverter.
BMS sys erro	22	The communication between batteries is faulty	(1) Please check whether the communication between the batteries is normal. (2) Contact customer service if error warning continues.
Bat over temp	23	Battery temperature is higher than the allowed value .	Disconnect the battery and reconnect it after an hour.
Bat UnderTemp	24	Battery temperature is lower than the allowed value .	Check the ambient temperature near the battery to see if it meets the specifications .
BMS comm.fail	27	Communication between lithium battery and inverter is abnormal or not in communication .	(1) Check the cable, crystal, Line sequence. (2) Checking the Battery switch .
Bat Fault	28	An alarm or fault occurs in the battery system .	(1) Check whether the battery generates alarms. (2) Contact customer service if error warning continues .
Grid Phase error	30	The power grid phase sequence is incorrectly connected.	Check power grid wiring
Arc Fault	31	PV Arc Fault.	(1) Check Photovoltaic panels , PV wire. (2) Contact customer service if error warning continues .

Bus soft fail	32	The inverter may be damaged.	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues .
Inv soft fail	33		
BUS short	34		
Inv short	35		
Fan fault	36	Fan fault .	(1) Check whether the Inverter temperature is abnormal. (2) Check whether the fan runs properly. (If you can see it)
PV iso low	37	PV Low insulation impedance .	Check if the PE line is connected to the inverter and is connected to the ground. Contact customer service if error warning continues .
Bus Relay Fault	38	The inverter may be damaged.	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues .
Grid Relay Fault	39		
EPS rly fault	40		
Gfci fault	41		
Selftest fail	44		
System fault	45		
Current Dcover	46		
Voltage Dcover	47		

Note: If an error occurs that is not listed in the table, Please Contact customer service

Warranty of Residential ESS

This warranty specified below applies to CFE RESS Creek to consumers through authorized resellers. The accessories and toolkits provided are not included. In the event of a major failure of your unit, you will be entitled to obtain a replacement unit and your warranty will be transferred to the new unit. The units must only be utilized with controllers or equipment which is explicitly deemed compatible.

In order to supply a high-quality service, you should make sure the unit remains connected with Internet so that it can be remotely checked.

1 Purpose

The purpose of this warranty is to define the matters related to warranty policy of products.

2 Warranty Condition

2.1 Warranty Period

The product warranty period is five (5) years, performance warranty ten (10) years from the sales date as mentioned in the Seller's invoice to End Users ("Invoice Date") or six(6) months from the date of manufacturing whichever comes first.

This warranty period covers a capacity equivalent to one (1) full cycle per day. Full cycle: Discharge the nominal capacity of a fully charged product and fully charge it afterwards. Micro cycles sum up to full cycles according to amount of energy charged and discharged. Note: Products are unavailable to protect themselves from deep discharge/charging in condition of without communication connection.

The products without communication connection warranty period is a 5(five) -year (1 full cycle per day) from the sales date as mentioned in the Seller's invoice to End Users (" Invoice Date"). Regarding self-discharging degradation, it is guaranteed for 180 days after ex-work.

2.2 Limitation of Warranty scope

Under this Warranty, we are responsible for either product replacement or product repair. The Period of Performance Guarantee will continue on any repaired unit. In the

event of a replacement units then the Period of Performance guarantee will transfer to the replacement unit.

In no event will be liable for any consequential, incidental or punitive damages (including without limitation of loss of profit, harm to goodwill or business reputation, or delay damages) arising from or out or the Product or its installation, use, performance or non-performance, or any defect or breach of warranty, whether based on contract, warranty, negligence, strict liability, or any other theory. Our aggregate liabilities, if any, in damages or otherwise, shall not exceed the purchase price paid by the Original Buyer for the product.

2.3 Exclusions of Warranty

Damage or impairment to the product resulting from any of following activities is NOT covered by this warranty:

Installation or use with any devices not approved as compatible.

Failure to install or use the product in the way intended, or as demonstrated in the installation manual including incorrect-installation of cables and connections.

Failure caused by charger or inverter unit.

Incorrect transportation, storage, installation or wiring by consumers or installers; if buyers fail to use the original packing materials provided by sellers during the transportation of equipment, any damage or failure of the product shall not fall under the warranty scope of the product.

Mistreatment of the product including incorrect installation environment, incorrect temperatures or using the units other than in the specified manner.

Damage caused by any impact, physical trauma to the unit such as dropping or mishandling.

Attempts to change the functionality of the unit in any way, exposure of the product influenced by movement or shaking following installation, or temperatures of more than 55°C or below -10°C.

Using the product outside of the clearly stated performance criteria for the unit.

Water ingress, corrosive gas damage or installation in dirty environments causing particles to affect performance.

Anyone other than those authorized may not modify, disassemble, repair or replace the product.

The unit must carry clearly identifiable and authentic serial number and labels.

Products suffered any external influences including unusual physical force, electrical stress (power failure surges, inrush current, lightning, flood, fire, accidental breakage, etc.).

Extensive superficial damage to the case demonstrating impact or mishandling or poor protection of the product.

Product damage and defect caused by deliberately or willful acts.

Product failure not reported to the seller or authorized service partner within 1 week of appearance.

The product not being operated for any period of 6 months or more.

Unusual physical or electrical stress caused by force majeure, such as power failure surges, inrush current, lightning, flood, fire, accidental breakage, etc.;

3 Performance Warranty

Guarantees that CFE RESS product will retain greater than or equal to 70% of output energy capacity for 10 years from the Invoice date and follow the specification as well as the user manual provided.

Capacity measurement conditions (referenced IEC: 62619)

Ambient temperature: 25 ± 2℃ 80%DOD

Total energy/Usable energy measured under specific conditions from 0.2C CC/CV at DC side. But, if you suspect our verification, the product must be tested by an EU certified origination or a certified 3rd party testing company. Meanwhile, any 3rd party evaluation service fees shall be at your own expense, unless your claim is proven to be valid, in which case will be responsible for the testing costs.

4 Warranty Policy

If the product is not of acceptable quality upon arrival, the customer is entitled to request product repair or replacement.

5 About Service Products/Parts

Service products or accessories could be used as new or refurbished condition and guarantees relevant performance is equal to or higher than replaced device.

If the product is no longer sold in the market, promises to replace it with different kinds of products with equal or higher functions and performances, or the residual annual depreciation value of the paid price by the buyer within the time limit for performance guarantee.

6 Claim Policy

Whether to repair or replace the product will be determined in its sole discretion. Claims under this warranty must be proposed from authorized distributors who purchased the product. Meanwhile, you must notify your distributor of a claim by:

Give a call or email to your distributor;

Contract with hotline or email us directly within 48 hours of a faulty discovered.

The following items must be included:

The original purchase receipt or equal valid document;

Description of the alleged defect(s) to your distributor after contacting service hotline or sending an email;

The product's serial number and the initial installation date.

If the product is suspected to be faulty, the unit should be returned to appointed distributors at the cost of customers at approved costs. If the unit is deemed faulty after inspection by designated experts, we will dispatch a REPLACEMENT or FIXED unit and credit the cost of returning the unit to us for testing (based on standard acceptable logistical costs).

7 Out of Warranty

In the event the product is out of warranty, may (in its discretion) provide certain after-sales service to Original Buyer, but all related costs and expenses, such as parts, labor costs and travel expenses, shall be borne by Original Buyer. To request such after-sales service, Original Buyer must provide sufficient information about any defects, to enable authorized service partner to determine whether such defects are capable of being repaired.