

4 Customized Interfaces

4.1 Obtaining the System Information of Optimizers

Data synchronization mechanism: The host is driven to refresh the system information of optimizers by the change of the serial number (SN).

Synchronization process: For details, see [6.3.7.1 Uploading Files](#).

Data storage of the solar inverters: After the device search and positioning are complete, the record is updated. The record format is as follows:

File type: 0x45

Table 4-1 File format(V102)

Data	Length (Bytes)	Remarks
File version	4	V102
Feature data sequence number	2	
Length	2	
Reserved	1	The reserved byte 0 is defined as the status. bit0: inverter disconnection status (1=disconnected)
	3	
Number of optimizers	2	Total number, including the offline optimizers.
Feature data of optimizer 1	108	For details about the data domain definition, see the Optimizer Feature Data Domain Definition.
Feature data of optimizer 2	108	

Data	Length (Bytes)	Remarks
Feature data of optimizer...	108	
Feature data of optimizer N	108	

Table 4-2 Feature data unit format(V102)

Data	Length (Bytes)	Remarks
Optimizer address	2	RS485 address
Online status	2	0: offline 1: online 2: disconnected
String number	2	
Position in current string	2	relative positive connection starting point
SN	20	
Software version	30	
Alias	20	
Model	30	

Table 4-3 Record format(V101)

Data	Length (Byte)	Remarks
Format version	4	V101
SN	2	-
Length	2	-
Reserved	4	-
Number of optimizers	2	n , including the offline optimizers
Feature data of optimizer 1	78	-
Feature data of optimizer 2	78	-
...	...	-
Feature data of optimizer n	78	-

Table 4-4 Feature data format (V101)

Data	Length (Byte)	Remarks
Optimizer address	2	Logical communication address
Status	2	0: offline 1: online
String number	2	-
Relative position of the PV string	2	1: near DC wiring terminals of the solar inverters
SN	20	-
Software version	30	-
Alias	20	-

4.2 Obtaining Real-time Data of Optimizers

Data synchronization mechanism: five-minute interval

Synchronization process: uploads the files and synchronizes data according to the time period; uploads the most recent data if there is no filter condition. For details, see [6.3.7.1 Uploading Files](#).

Data storage: stores real-time data at five-minute intervals.

File type: 0x44

Table 4-5 Record format

Data	Length (Byte)	Remarks
File version	4	V101
Reserved	8	-
Optimizer data unit 1	N	12 + 26 x Number of optimizers , For details about the definition of this unit, see the data unit format.
Optimizer data unit 2	N	-
...	-	-
Optimizer data unit <i>n</i>	N	<i>n</i> indicates the number of data records that meet the filter condition. Each piece of data contains all optimizer data for a time node.

Table 4-6 Data unit format (V101)

Data	Length (Byte)	Remarks
Time	4	Epoch seconds, local time
Reserved	4	-
Length	2	-
Number of optimizers	2	-
Real-time data of optimizer 1	26	For details about the definition of this unit, see the real-time data format.
Real-time data of optimizer 2	26	-
...	-	-
Real-time data of optimizer n	26	n is the number of optimizers.

Table 4-7 Real-time data format

Data	Length (Byte)	Remarks
Optimizer address	2	Logical communication address
Output power	2	Gain: 10 Unit: W
Voltage to ground	2	Gain: 10 Unit: V

Data	Length (Byte)	Remarks
Alarm	4	Bit00: input overvoltage Bit01: input undervoltage Bit02: output overvoltage Bit04: overtemperature Bit06: output short circuit Bit07: EEPROM fault Bit08: internal hardware fault Bit09: abnormal voltage to ground Bit 10: power-off due to heartbeat timeout Bit 11: fast shutdown Bit 12: request escape alarm Bit 13: version mismatch alarm Bit 16: input overvoltage Bit 17: overtemperature Bit 18: output short circuit Bit 19: internal hardware fault Bit 20: version mismatch alarm Bit 21: backfeed alarm Bit 22: abnormal output voltage Bit 23: upgrade failure Bit 31: alarm display selection, 1=Display bit 16 to bit 30 alarms, 0: Bits 0 to 15 are displayed.
Output voltage	2	Gain: 10 Unit: V
Output current	2	Gain: 100 Unit: A
Input voltage	2	Gain: 10 Unit: V
Input current	2	Gain: 100 Unit: A
Temperature	2	Gain: 10 Unit: °C

Data	Length (Byte)	Remarks
Running status	2	0: offline 1: standby 3: faulty 4: running 12: power-off
Accumulated energy yield	4	Gain: 1000 Unit: kWh