



**WebdynSunPM**  
**Annex**

**Kaco**

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# 1. Kaco

## 1.1 Supported equipment

KACO inverters are compatible with the following protocols implemented in WebdynSunPM:

Inverter protocol	Physical interface	Features
KACO	RS485 2-wire	32 max
Modbus RTU	RS485 2-wire	32 max
SunSpec Modbus TCP	Ethernet	100 max

### Note

Depending on the amount of data collected, the maximum number of devices can be reduced.

### Warning

On the same physical RS485 interface, connected inverters must have the same serial protocol and configuration.

A non-exhaustive list of supported Kaco equipment is available below:

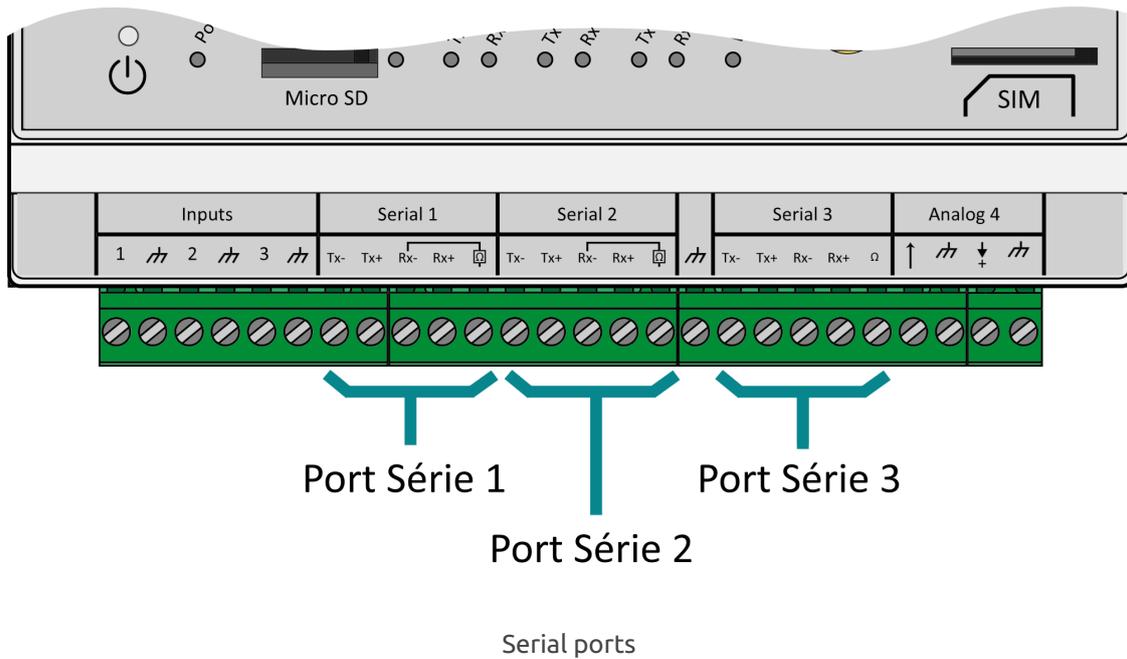
Inverters	KACO (RS485)	Modbus RTU	Modbus TCP
Powador 2500xi / 3600xi / 4000xi / 4500xi / 5000xi	✓		
Powador 2500xi / 3600xi / 4000xi / 4500xi / 5000xi	✓		
Powador 4000 supreme	✓		
Powador 2002 / 3002 / 4202 / 5002 / 6002	✓		
Powador 6400xi / 6650xi / 7200xi / 8000xi	✓		
Powador 6400 / 6650 / 7200 / 8000 supreme	✓		
Powador 10.0 TL3 / 12.0 TL3 / 14.0 TL3	✓		✓ (SunSpec)
Powador 25000xi / 30000xi / 33000xi / Park	✓		
Powador 30.0 TL3 / 37.5 TL3 / 39.0 TL3 / 72.0 TL3	✓		✓ (SunSpec)
Powador 12.0 TR3 / 14.0 TR3 / 18.0 TR3	✓		✓ (SunSpec)
Powador XP100-HV / XP200-HV / XP250-HV	✓		✓ (SunSpec)
Powador XP200-HV TL / XP250-HV TL / XP350-HV TL	✓		✓ (SunSpec)
Blueplanet 3.0 TL3 - 10.0TL3			✓ (SunSpec)
Blueplanet NX1	✓		
Blueplanet NX3	✓		✓ (SunSpec)
Blueplanet 3.0 - 5.0 NX1 M2		✓	
Blueplanet 3.0 - 20.0 NX3 M2	✓	✓ (SunSpec)	✓ (SunSpec)
Blueplanet 25.0 - 33.0 NX3 M3	✓	✓ (SunSpec)	✓ (SunSpec)
Blueplanet Gridsave 50.0 - 137 TL3			✓ (SunSpec)

## 1.2 Connection of gateway to KACO inverters via RS485 bus

KACO inverters are connected to one of WebdynSunPM's three RS485 communication buses.

### Note

For further details, please refer to the **WebdynSunPM** user manual.



**Warning**

All wiring work must be carried out by a qualified electrician. Prior to installation, all devices connected to the corresponding communication bus must be disconnected on both sides (DC and AC). Please observe all safety instructions in the inverter documentation.

**1.2.1 Wiring KACO inverters with 2-wire RS485 (Half-Duplex)**

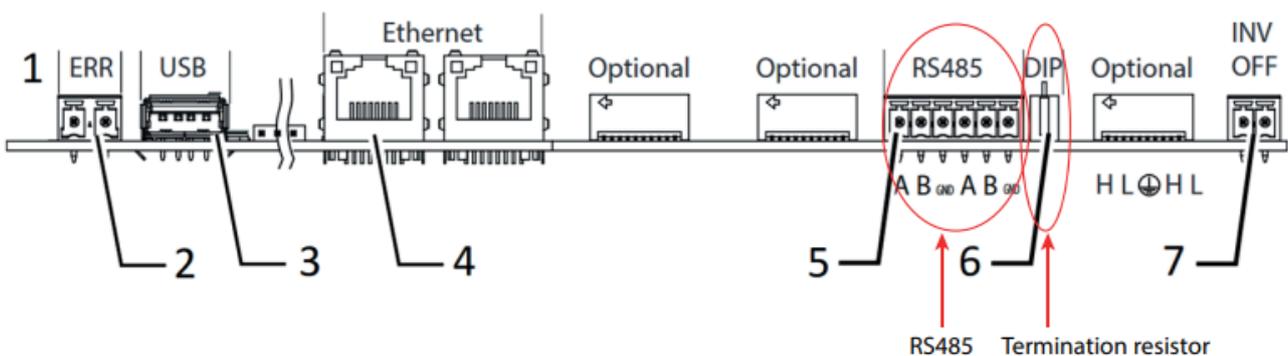
**Note**

For RS485 wiring, please refer to the KACO inverter manual.

Kaco serial wiring Here are the wiring diagrams for KACO communications boards

**1.2.2 Communication board**

• Câblage



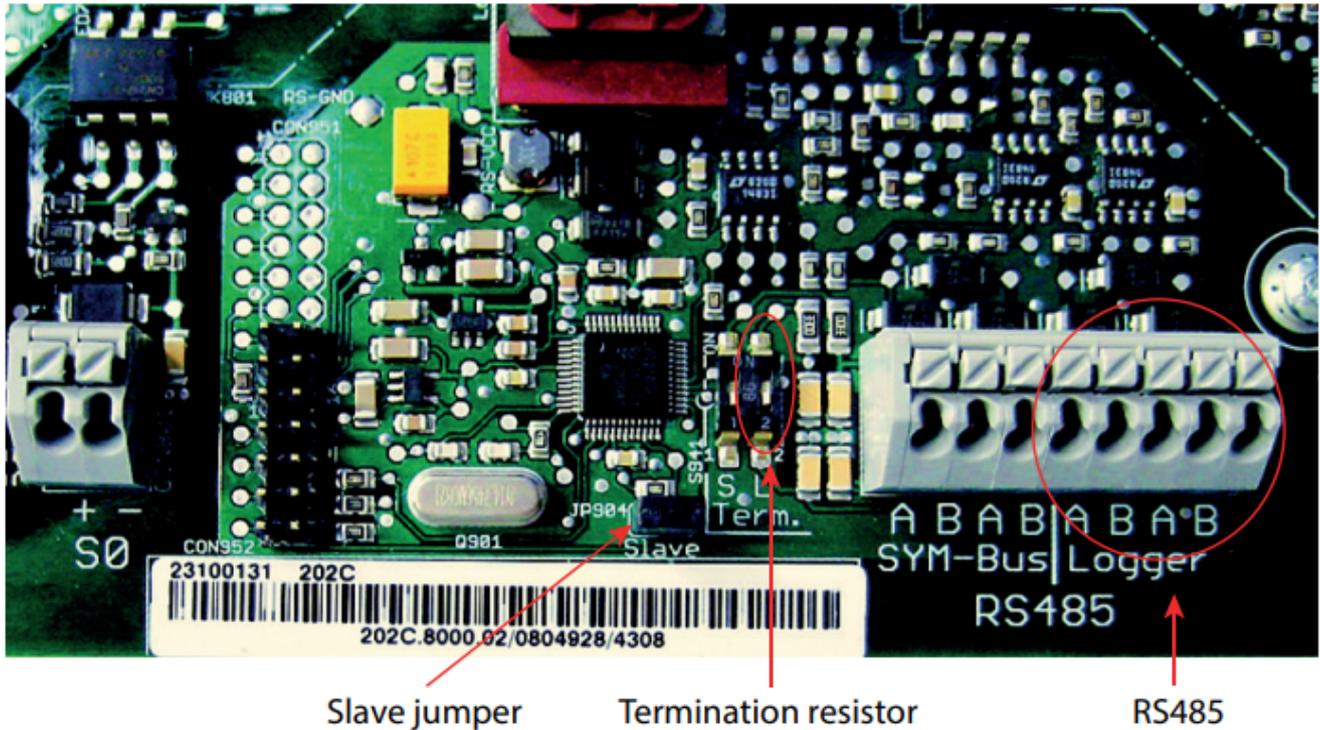
Kaco com card wiring

• Résistance de terminaison

A 120Ω termination resistor must be activated by setting the DIP switch to ON on the inverter placed at the end of the line.

### 1.2.3 Inverter Powador 6400xi / 6650xi / 7200xi / 8000xi

- Câblage



Kaco Powador wiring

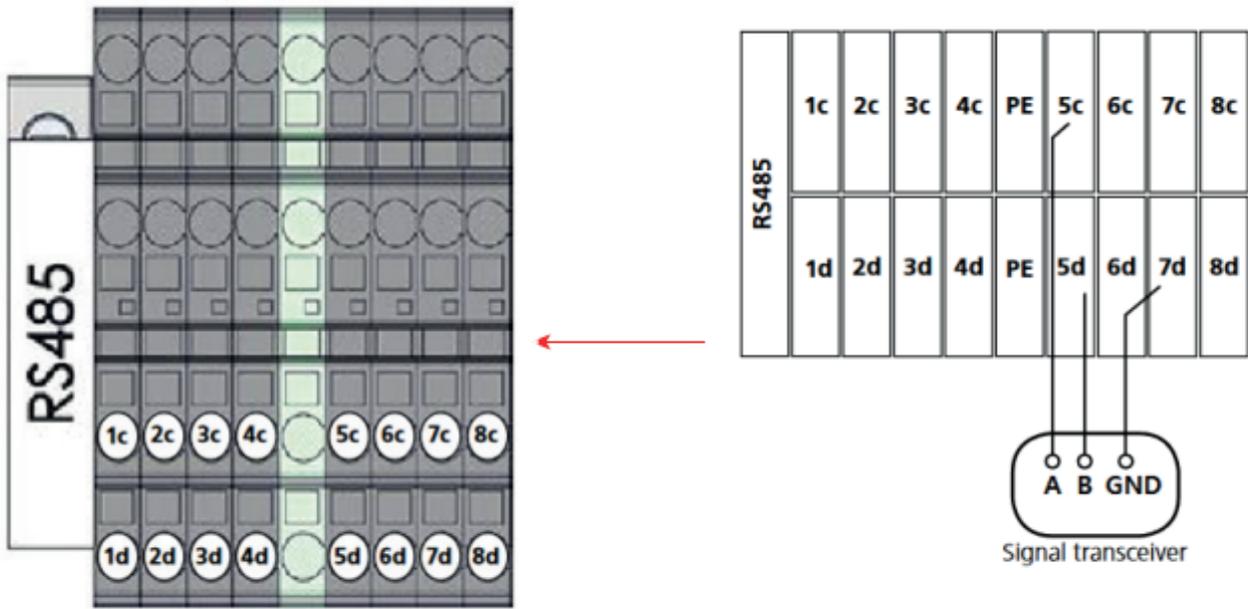
Slave jumper must be inserted.

- Résistance de terminaison

A 120Ω termination resistor must be activated by setting DIP switch 2 "L" to ON on the inverter placed at the end of the line.

### 1.2.4 blueplanet 1000/875/750 TL3 inverter

- Câblage



Kaco Blueplanet wiring

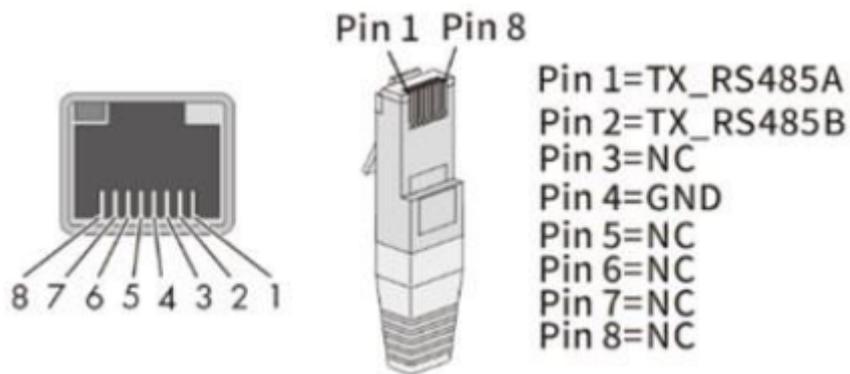
Pinout	Designation	Specification	Cable cross-section
5c	RS485 A2	RS485 Signal A2	WG22 (0.326mm <sup>2</sup> )
5d	RS485 A2	RS485 Signal B2	WG22 (0.326mm <sup>2</sup> )
7c	RS485 C2	Terminator resistor terminal	WG22 (0.326mm <sup>2</sup> )
7d	RS485 G2	RS485 data transmission GND 2	WG22 (0.326mm <sup>2</sup> )

• **Résistance de terminaison**

A 120Ω termination resistor must be activated by shunting terminal "5d" and terminal "7c" of the inverter's RS485 terminal block placed at the end of the line.

**1.2.5 Blueplanet NX3 inverter (3.0 / 20.0)**

• **Câblage**



Kaco Blueplanet wiring

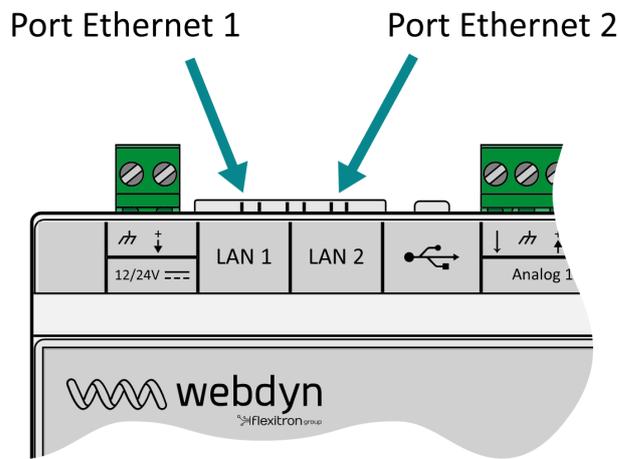
**Note**

Connection to the RJ45 socket requires at least a Cat 5E network cable.

### 1.3 Connecting the gateway to inverters with Sunspec Modbus TCP via Ethernet

SunSpec Modbus TCP inverters are connected via one of WebdynSunPM's two Ethernet interfaces (LAN1 or LAN2).

The maximum cable length between two network participants is also referred to as the "end-to-end link". The maximum length of end-to-end connections depends on the type of cable. When using rigid cable (installation cables), the maximum length is 100 meters.



WebdynSunPM Ethernet ports

**Note**

For further details, please refer to the **WebdynSunPM** user manual.

#### 1.3.1 Serial/daisy-chain topology cabling

**Warning**

Only for inverters with 2 ethernet sockets

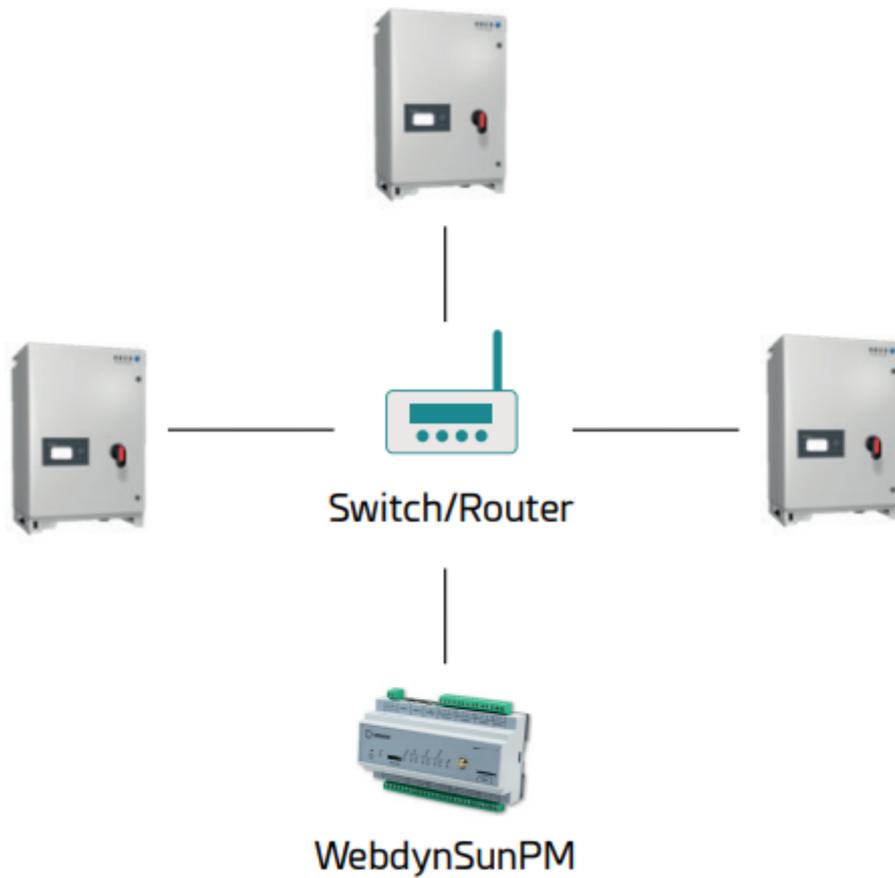


Daisy chain wiring

### 1.3.2 Wiring in star topology

**Note**

A switch or router is required for the number of devices to be connected



Star wiring

**Info**

Kaco inverters can also be connected to a Wifi-compatible router/switch. As the WebdynSunPM does not have Wi-Fi connectivity, it must be connected to the router/switch using an ethernet cable.

Wifi USB key (Kaco accessory, Wlan adapter Digitus 150 N micro art. 3013222)

## 1.4 Serial link configuration

The serial link configuration on Kaco inverters cannot be modified.

### Warning

Check that the serial ID is different for all KACO equipment connected to the site.

### Info

Please refer to **manuel utilisateur WebdynSunPM** for precise serial link configuration.

The concentrator's serial link can be configured from the on-board web interface or from the `<uid>_daq.csv` file stored in the `/CONFIG` directory on remote server 1.

Here are the parameters for each interface:

Web interface	<code>&lt;uid&gt;_daq.csv</code>	Value
Protocol	protocol	KACO
Mode	wires	RS485 2 wires
Baudrate	baudrate	9600
Data bits	data_bits	8
Parity	parity	None
Stop bits	stop_bits	1
Interframe	interframe	0
Forwarded TCP port	forwarded_port	

## 1.5 Ethernet link configuration

An IP address must be assigned to each inverter. This address must be unique and belong to the same subnetwork as the WebdynSunPM.

### Info

Please refer to **manuel utilisateur WebdynSunPM** for precise ethernet link configuration.

The Ethernet link can be configured from the on-board web interface or from the `<uid>_daq.csv` file stored in the `/CONFIG` directory on remote server 1.

Here are the parameters available for each interface:

Web interface	<uid>_daq.csv	Default value
IP	ip	192.168.1.12 (lan1) / 192.168.2.12 (lan2)
Netmask	netmask	255.255.255.0
Gateway	gateway	
DNS 1	dns1	
DNS 2	dns2	

### ! Warning

If your local network is managed by a network administrator, contact him or her before integrating the WebdynSunPM gateway into your network.

## 1.6 Configuring a Kaco inverter on the hub

Depending on the protocol used, several configuration methods are available:

Protocol	Automatic detection	Manual addition
Kaco (RS485)	✓	✗
Modbus RTU	✗	✓
SunSpec	✓	✓

### i Info

Please refer to **manuel utilisateur WebdynSunPM** for manual equipment addition or automatic detection.

## 1.7 Kaco protocol definition file

The file names for the KACO protocol are as follows:

```
<uid>_KAC_Inverter_KAC_<Modèle>.csv
```

With:

- <uid> : unique identifier for the concentrator
- <Modèle> : automatically generated from KACO protocol "Model" information

The file is built with a specific header line followed by the description of the registers.

- **En-tête**

Protocol;Category;Manufacturer;Model

• **Description des registres**

Index;Info1;Info2;Info3;Info4;Nom;Tag;Mise à l'échelle;Décalage;Unité;Code Action

The **Info1,Info2,Info3,Info4** fields in the Kaco protocol correspond to:

- **Info1:** Channel - channel number of the variable to be collected. This information is specific to the inverter and must not be modified.
- **Info2:** Type Variable - type of variable to be collected (analog, digital, ...). This information is specific to the inverter and must not be modified.
- **Info3:** KACO Variable format - The following formats are allowed:
  - U32: 32-bit unsigned integer (4 bytes, or 2 registers)
  - F32: 32-bit float (4 bytes, or 2 registers)
  - String: the variable is a character string. In this case, use the notation "Address\_Size" for the "Info2" field.
- **Info4:** not used

Here is an example of a definition file:

```

ACO;Inverter;KAC;10k1
1;1;0;U32;;Status L1;;1.000000;0.000000;-;8
2;1;1;U32;;Generator Voltage L1;;1.000000;0.000000;V;2
3;1;2;F32;;Generator Current L1;;1.000000;0.000000;A;2
4;1;3;F32;;Generator Power L1;;1.000000;0.000000;W;2
5;1;4;U32;;Grid Voltage L1;;1.000000;0.000000;V;2
6;1;5;F32;;Grid Current L1;;1.000000;0.000000;A;2
7;1;6;F32;;Grid Power L1;;1.000000;0.000000;W;2
8;1;7;U32;;Inverter Temperature L1;;1.000000;0.000000;°C;2
9;1;8;U32;;Daily Energy L1;;1.000000;0.000000;Wh;4
10;1;9;STRING;;Inverter type L1;;1.000000;0.000000;-;1
11;2;0;U32;;Status L2;;1.000000;0.000000;-;4
12;2;1;U32;;Generator Voltage L2;;1.000000;0.000000;V;2
13;2;2;F32;;Generator Current L2;;1.000000;0.000000;A;2
14;2;3;F32;;Generator Power L2;;1.000000;0.000000;W;2
15;2;4;U32;;Grid Voltage L2;;1.000000;0.000000;V;2
16;2;5;F32;;Grid Current L2;;1.000000;0.000000;A;2
17;2;6;F32;;Grid Power L2;;1.000000;0.000000;W;2
18;2;7;U32;;Inverter Temperature L2;;1.000000;0.000000;°C;2
19;2;8;U32;;Daily Energy L2;;1.000000;0.000000;Wh;4
20;2;9;STRING;;Inverter type L2;;1.000000;0.000000;-;1
21;3;0;U32;;Status L3;;1.000000;0.000000;-;4
22;3;1;U32;;Generator Voltage L3;;1.000000;0.000000;V;2
23;3;2;F32;;Generator Current L3;;1.000000;0.000000;A;2
24;3;3;F32;;Generator Power L3;;1.000000;0.000000;W;2
25;3;4;U32;;Grid Voltage L3;;1.000000;0.000000;V;2
26;3;5;F32;;Grid Current L3;;1.000000;0.000000;A;2
27;3;6;F32;;Grid Power L3;;1.000000;0.000000;W;2
28;3;7;U32;;Inverter Temperature L3;;1.000000;0.000000;°C;2
29;3;8;U32;;Daily Energy L3;;1.000000;0.000000;Wh;4
30;3;9;STRING;;Inverter type L3;;1.000000;0.000000;-;1
31;100;0;F32;;Grid Power Total;;1.000000;0.000000;W;4
32;100;1;U32;;Daily Energy Total;;1.000000;0.000000;Wh;4

```