Installation / User Manual

Deye Three-phase Wireless Communication CT
SUN-SMART-CT01

- Measures W,V,A,Var,PF,KWh,Hz.
- Bi-directional measurement IMP & EXP
- RS485 Modbus/Lora
- Din rail mounting 35mm
- CT connection

Ver:1.2.0

Table of Contents

Instruction

This document provides operating, maintenance and installation instructions. The unit measures and displays the characteristics of single phase two wires (1p2w), and three phase four wires(3p4w) supplies, including voltage, frequency, current, power,active and reactive power, imported or exported energy. Energy is measured in terms of kWh. In order to measure energy, the unit requires voltage and current inputs in addition to the supply required to power the product. The requisite current input(s) are obtained via current transformers(CT).

This meter needs to work together with current transformers (CTs). Supports both LoRa and RS 485 communication methods simultaneously.

Unit Characteristics

The Unit can measure and display:

- Line to neutral of all phases
- Frequency
- Currents of all phases
- Active power of all phases,Reactive power of all phases,Power factor
- Active energy imported and exported

An RS485 output allows remote monitoring from another display or a computer.

RS485 Serial – Modbus RTU

This uses an RS485 serial port with Modbus RTU protocol to provide a means of remotely monitoring and controlling the Unit.

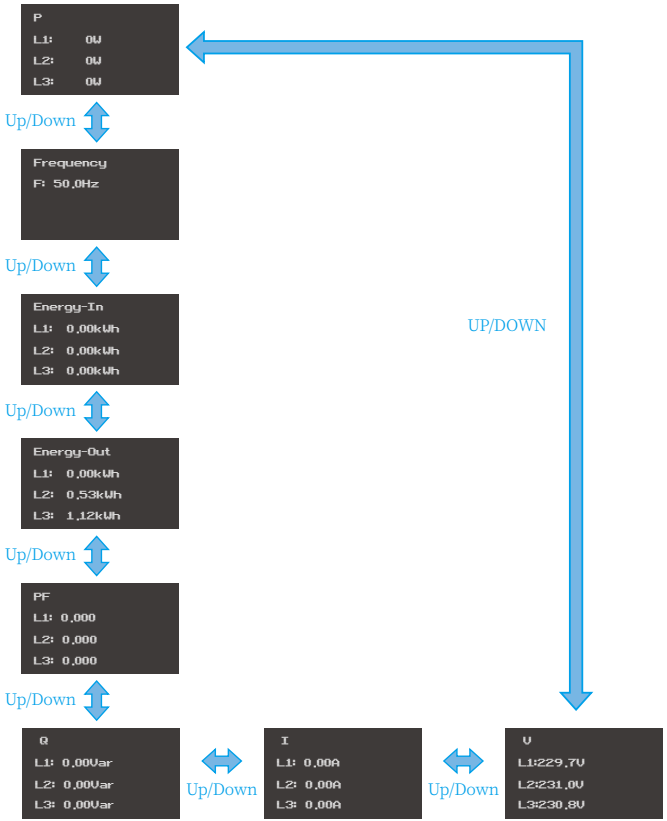
User Interface

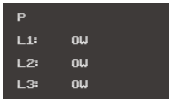
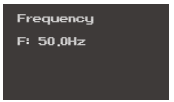
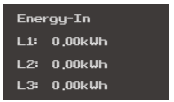
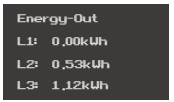
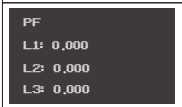
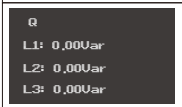
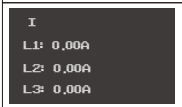
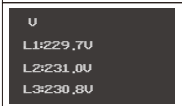
This meter has a LCD display and four buttons for user interaction.

The buttons operate as follows:

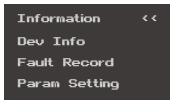
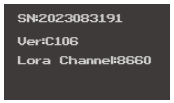
1		This is the “Back” button, press this button, the screen will back to the previous screen.
2		This is the “Up” button to turn to the previous option.
3		This is the “Down” button to turn to the next option .
4		This is the “Enter” button to select the current option.

Screens Of Data Display



	The first screen displays the power of each phase.
	Press the "Down" button under the first screen , the screen will display the Frequency measured.
	Press the "Down" button under the previous screen, the screen will display the input energy of each phase of the inverter.
	Press the "Down" button under the previous screen, the screen will display the output energy of each phase of the inverter.
	Press the "Down" button under the previous screen, the screen will display the power factor(PF) of each phase of the inverter.
	Press the "Down" button under the previous screen, the screen will display the reactive power of each phase of the inverter.
	Press the "Down" button under the previous screen, the screen will display the current of each phase of the inverter.
	Press the "Down" button under the previous screen, the screen will display the voltage of each phase to neutral of the inverter. Then press the "Down" button again, the screen will back to the first screen.

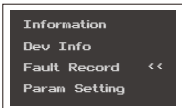
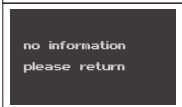
Screens Of Information

	From the Screens of data measured or calculated,press the “Enter” button, the screen will display the left content,the cursor just behinds the “Information”.
	From the above screen, press the “Enter” button, the screen will display the series number and firmware’ s version of this device. Press the “Esc” button, the screen will back to the previous level.

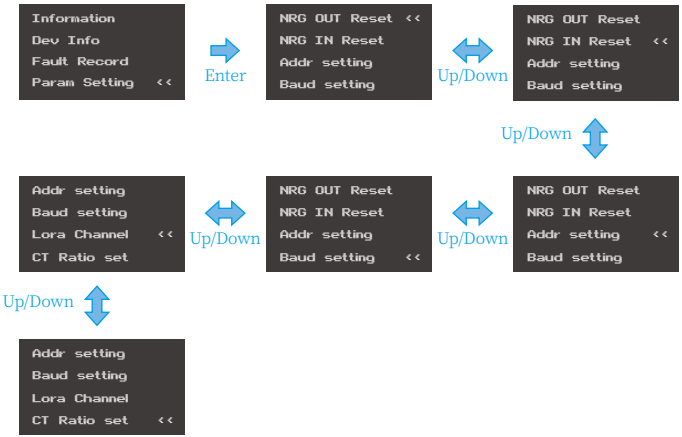
Screens Of Dev Info

	When the cursor behinds the “Information”, press the “Enter” button, the screen will display the left content, the cursor will behind the "Dev info".
	Press the “Enter” button again, the screen will display the left content,“N-N” means meter isn't connectting with inverter, “N-C” means wireless connection with inverter, “C-N” means RS485 wired connection with inverter. Press the “Esc” button one more time, the screen will back to “Param Setting”.

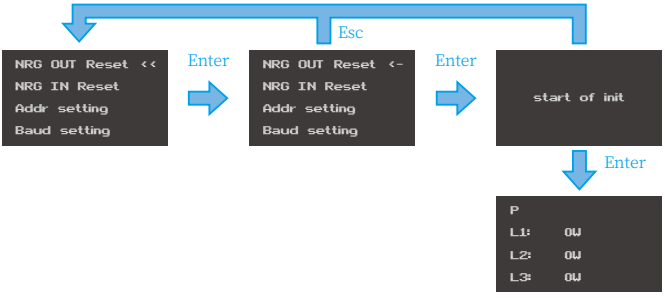
Screens Of Fault Record

	When the cursor behinds the “Dev Info”, press the “Enter” button, the screen will display the left content, the cursor will behind the “Fault Record”.
	When the cursor behind the “Fault Record”, press the “Enter” button, the screen will display the left content. Press the “Esc” button, the screen will back to the previous level.

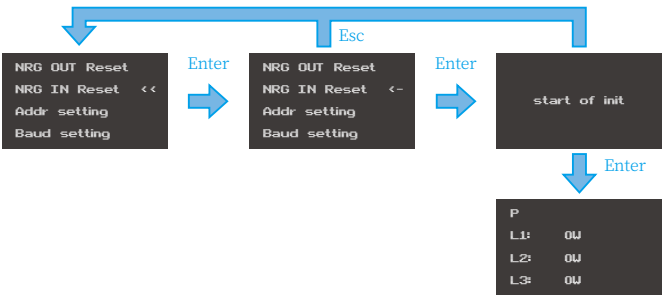
Screens Of Param Setting



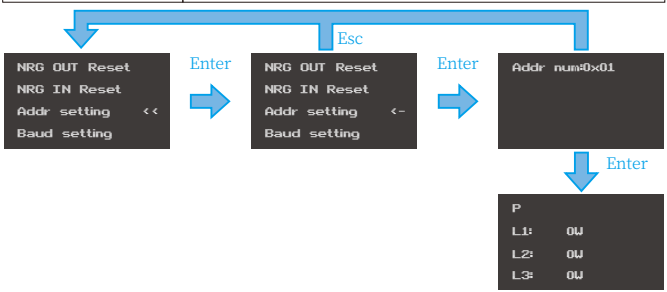
Information Dev Info Fault Record Param Setting <<	When the cursor behinds the “Fault Record”, press the “Enter” button, the screen will display the left content, the cursor will behind the “Param Setting”.
NRG OUT Reset << NRG IN Reset Addr setting Baud setting	When the cursor behinds the “Param Setting”, press the “Enter” button, the screen will display the left content, the cursor will behind the “NRG OUT Reset”.
NRG OUT Reset <- NRG IN Reset Addr setting Baud setting	Press the “Enter” button again, the screen will display the left content, the cursor changes to an arrow, indicating that “NRG OUT Reset” has been selected.
start of init	Press the “Enter” button again, the screen will display the left content, the data of “Energy_Out” will be initialized. Press the “Esc” button, the screen will back to “Param Setting”.



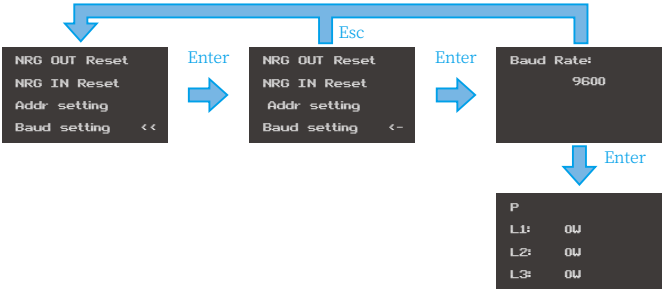
NRG OUT Reset NRG IN Reset << Addr setting Baud setting	When the cursor behinds the “NRG OUT Reset”, press the “Down” button, the screen will display the left content,the cursor will behind the “NRG IN Reset”.
NRG OUT Reset NRG IN Reset <- Addr setting Baud setting	Press the “Enter” button, the screen will display the left content, the cursor changes to an arrow, indicating that “NRG IN Reset” has been selected.
start of init	Press the “Enter” button again, the screen will display the left content, the data of “Energy_In” will be initialized.Press the “Esc” button, the screen will back to “Param Setting”.



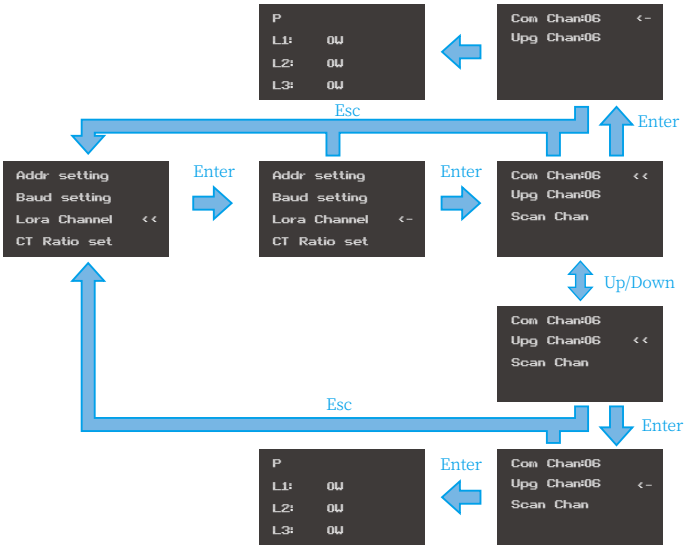
NRG OUT Reset NRG IN Reset Addr setting << Baud setting	When the cursor behinds the “NRG IN Reset”, press the “Down” button, the screen will display the left content, the cursor will behind the “Addr setting”.
NRG OUT Reset NRG IN Reset Addr setting <- Baud setting	Press the “Enter” button, the screen will display the left content, the cursor changes to an arrow, indicating that “Addr setting” has been selected.
Addr num:0x01	The RS485 communication address of this meter. Default value: 0x01, range :0x01~0xFF, press “Up” and “Down” to change the value, then press “Enter” to save the setting.



NRG OUT Reset NRG IN Reset Addr setting Baud setting <<	When the cursor behinds the “Addr setting”, press the “Down” button, the screen will display the left content, the cursor will behind the “Baud setting”.
NRG OUT Reset NRG IN Reset Addr setting Baud setting <-	Press the “Enter” button, the screen will display the left content, the cursor changes to an arrow, indicating that “Baud setting” has been selected.
Baud Rate: 9600	The baud rate of communication for this meter. Default value:9600, range: 9600/14400/19200/38400/56000/57600/115200. Press “Up” and “Down” to change the value, then press “Enter” to save the setting.

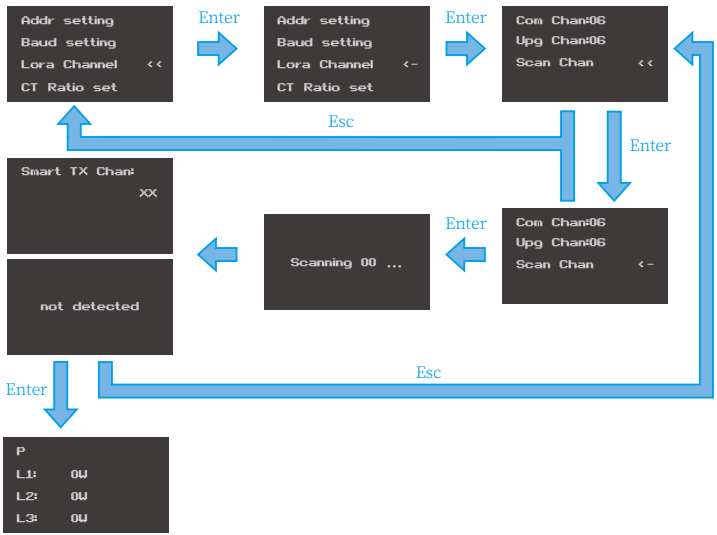


Addr setting Baud setting Lora Channel << CT Ratio set	When the cursor behinds the “Baud setting”, press the “Down” button, the screen will display the left content, the cursor will behind the “Lora Channel”.
Addr setting Baud setting Lora Channel <- CT Ratio set	Press the “Enter” button, the screen will display the left content, the cursor changes to an arrow, indicating that “Lora Channel” has been selected.
Com Chan:06 << Upg Chan:06 Scan Chan	Press “Enter” button again, the LCD will display the left content, includes the parameters “Com Chan:**”,“Upg Chan:**”and“Scan Chan”.
Com Chan:06 <- Upg Chan:06 Scan Chan	Press the “Enter” button again, the screen will display the left content, the cursor changes to an arrow, indicating that “Com Chan”has been selected. And then you can press the “Up” and“Down” button to change the value of “Com Chan", range:00 to 09.
Com Chan:06 Upg Chan:06 << Scan Chan	After entering the “Lora channel” page, press “Down”or “Up” button to keep the cursor behind the “Upg Chan” .
Com Chan:06 Upg Chan:06 <- Scan Chan	Press the “Enter” button to select “Upg Chan”, and the cursor will change to an arrow.

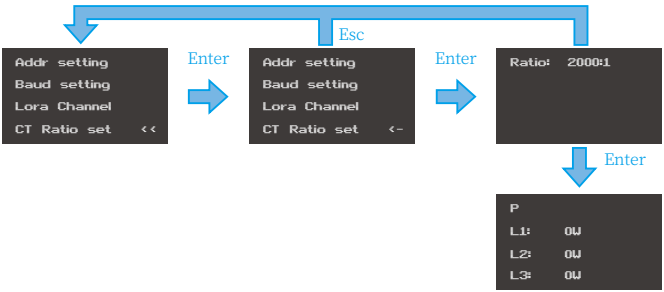


Com Chan:06 Upg Chan:06 Scan Chan <<	After entering the “Lora channel” page, press “Down”or “Up” button to keep the cursor behind the “Scan Chan” .
Com Chan:06 Upg Chan:06 Scan Chan <-	Press the “Enter” button to select “Scan Chan”, and the cursor will change to an arrow.
Scanning 00 ...	Press the "Enter" button again, the meter will begin to scanning from 00 to 09 to find out the communication channel of the transmitter.

Smart TX Chan: XX	If the communication channel of the transmitter is successfully scanned, the content similar to the left picture will be displayed on the LCD of the meter.
not detected	Else, the channel of transmitter hasn't been scanned successfully, the LCD of meter will display "Not detected".



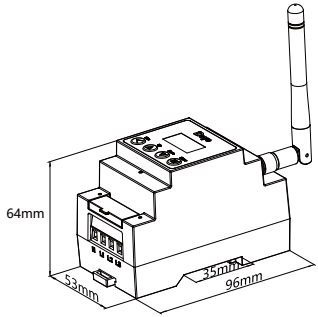
Addr setting Baud setting Lora Channel CT Ratio set ‹‹	When the cursor behinds the “Lora Channel”, press the “Down” button, the screen will display the left content,the cursor will behind the “CT Ratio set”.
Addr setting Baud setting Lora Channel CT Ratio set ‹-	Press the “Enter” button, the screen will display the left content, the cursor changes to an arrow, indicating that “CT Ratio set” has been selected.
Ratio: 2000:1	Press the “Enter” button again to enter the ratio settting page, press the “Up” and “Down” button to set the value of ratio according to the ratio of CT you're actually using. Range: 2000:1 to 10000:1, the minimum adjustable unit is 100.



SUN-SMART-CT01 Microinverter Datasheet

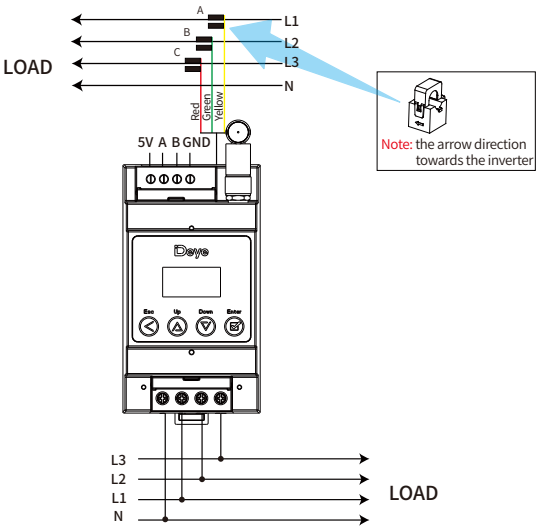
Model	SUN-SMART-CT01
Electrical parameters	
Connection Type	L1/N(single phase)，L1/L2/L3/N(three phase)
CT	Secondary current：50mA
Operation Voltage(V)	85~300Va.c.(L-N)
Rated Frequency/Range(Hz)	50Hz（45Hz-55Hz）/60Hz（55Hz-65Hz）
Self Consumption Power（W）	≤2W
AC voltage withstand	4KV/1min
Accuracy	
Voltage	±0.1V
Current	±0.01A
Frequency	±0.01Hz
Power	±1W
Communication and Display	
Communication Interface	Lora/RS485
Lora Communication Distance	200m(Unobstructed)
Display	LCD
Display Data	Voltage、Current、Active power、Reactive power、Frequency、Power Factor、Energy
General Data	
Operation Temperature	-40 to +60 C
Operation Humidity	0-75%
Ingress Protection(IP) Rating	IP20
Altitude	≤4000
Mounting	DIN-Rail Mounting
Size	53x96x64mm
Weight	0.15 kg
Warranty	5 Years
Certification standards	IEC/EN 61010-1
Lora	
Frequency Range	863MHz-870MHz
Antenna	External Antenna
Antenna Gain	0.79dBi@868MHz

Dimensions

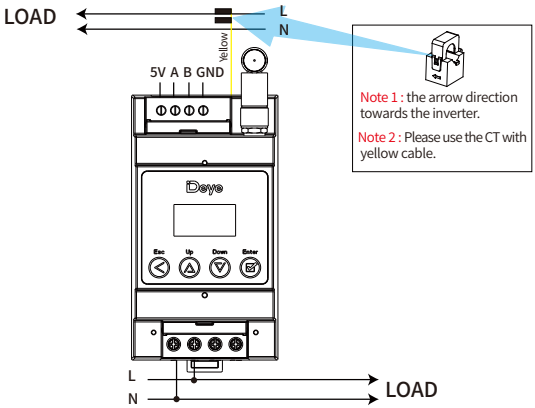


Installation

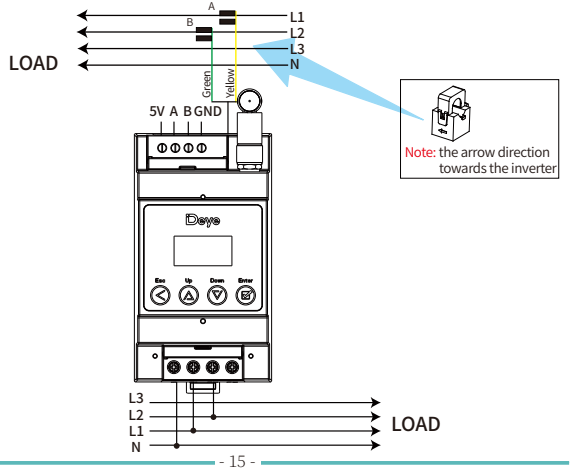
Three phase four wire



Single phase two wire

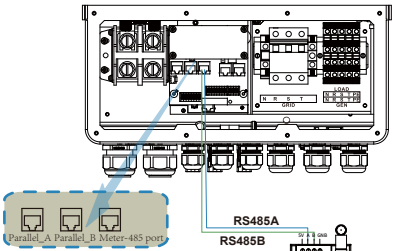


Split phase three wire



Warning:
N wire must be connected, and N wire cannot be connected to any of L1, L2, or L3, otherwise there is a risk of damage

Wired Communication

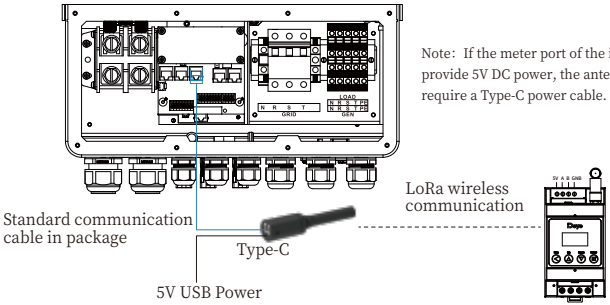


Defination of RJ45 Port pin for Meter-485

No.	Meter-485 Pin
1	485-B
2	485-A
3	COM-GND
4	485-B
5	485-A
6	COM-GND
7	485-A
8	485-B

Note:The defination of meter-485 port (Please refer to the user manual of your inverter)

Wireless Communication



Note: If the meter port of the inverter can provide 5V DC power, the antenna does not require a Type-C power cable.

Commissioning Steps

Step 1: When using RS485 wired communication, refer to page 8 of this user manual to set the communication address and baud rate.

Step 2: If you are not using the default 100A/50mA current transformer (CT), please refer to page 12 of this user manual to set the CT ratio.

When using wireless Lora communication method, the following two steps need to be performed,

Step 3: Please refer to the "smart devices" section in the user manual of the hybrid inverter, input the SN of the smart CT on the inverter's LCD and enable the wireless CT meter.

Step 4: Refer to page 11 of this user manual to perform channel scanning in order to establish communication with the Lora master node of the hybrid inverter.

EU Declaration of Conformity

within the scope of the EU directives
· Radio Equipment Directive 2014/53/EU (RED)
· Restriction of the use of certain hazardous substances 2011/65/EU(RoHS)

NINGBO DEYE INVERTER TECHNOLOGY CO., LTD. confirms herewith that the products described in this document are in compliance with the fundamental requirements and other relevant provisions of the above mentioned directives. The entire EU Declaration of Conformity and certificate can be found at https://www.deyeinverter.com/download/#smart-load.

EU Declaration of Conformity

Product: **Radio Equipment(Smart CT)**
Models:SUN-SMART-CT01
Name and address of the manufacturer: Ningbo Deye Inverter Technology Co., Ltd.
No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China

This declaration of conformity is issued under the sole responsibility of the manufacturer. Also this product is under manufacturer's warranty.
This declaration of conformity is not valid any longer: if the product is modified, supplemented or changed in any other way, as well as in case the product is used or installed improperly.

The object of the declaration described above is in conformity with the relevant Union harmonization legislation: The restriction of the use of certain hazardous substances (RoHS) Directive 2011/65/EU and the Radio Equipment Directive (RED) 2014/53/EU.

References to the relevant harmonized standards used or references to the other technical specifications in relation to which conformity is declared:

ETSI EN 300 220-2 V3.1.1	●
ETSI EN 301 489-1 V2.2.3:2019	●
ETSI EN 301 489-3 V2.3.2:2023	●
EN 62479:2010	●
EN IEC 61000-6-1:2019	●
EN IEC 61000-6-3:2021	●
EN 61010-1:2010+A1+AC	●

Nom et Titre / Name and Title:

Bard Dai
Senior Standard and Certification Engineer

Au nom de / On behalf of:
Ningbo Deye Inverter Technology Co., Ltd.
Date / Date (yyyy-mm-dd):
2025-01-15
A / Place:
Ningbo, China

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