

Informe justificatiu per a instal·lació fotovoltaica de 100 kWn



| | |
|---|---|
| Promotor | Superfícies de alimentación, S.A. |
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| Signatura Superfícies de Alimentación SA | <p>SUPERFICIES DE ALIMENTACION S.A. C/ CTRA. DE... LO, 108-120 08403 GRAN... (BARCELONA) A 08.586.539</p> |

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1. Objecte

El present informe té l'objecte de donar compliment a allò que s'estableix en l'Annex II, apartat All.A1, punt e), del *Reial Decret 477/2021, del 29 de juny, pel qual s'aprova la concessió directe a les comunitats autònomes i a les ciutats de Ceuta i Melilla d'ajudes per l'execució de diversos programes d'incentius lligats a l'autoconsum i a l'emmagatzematge, amb fonts d'energia renovable, així com la implantació de sistemes tèrmics renovables en el sector residencial, en el marc del Pla de recuperació, Transformació i Resiliència*, pel qual requereix que per tots el projectes que superin els 100 kW de potència nominal, s'aporti un informe que indiqui:

- Pla estratègic. On s'indiqui l'origen o lloc de fabricació (nacional, europeu o internacional) dels components de la instal·lació i el seu impacte medi ambiental, incloent l'emmagatzematge, els criteris de qualitat o durabilitat utilitzats per seleccionar els diferents components, la interoperabilitat de la instal·lació o el seu potencial per oferir serveis al sistema, així com l'efecte tractor sobre PYMES i autònoms que s'espera que tingui el projecte. Podrà incloure , a més a més, estimacions sobre el seu impacte sobre els llocs de treball locals i sobre la cadena de valor industrial local, regional i nacional.
- Justificació del compliment pel projecte del principi de no causar danys significatius a cap dels objectius medi ambientals establerts en el Reglament (UE) 2020/852 del Parlament Europeu i del Consell de 18 juny de 2020, relatiu a l'establiment d'un marc per facilitar les inversions sostenibles, i pel que es modifica el Reglament (UE) 2019/2088.
- Acreditar el compliment de la valorització del 70% dels residus de construcció i demolició generats en les obres civils realitzades.

2. Dades del sol·licitant i dades de la instal·lació.

2.1. Identificació del sol·licitant de l'ajut.

| | |
|--------------------|---------------------------------|
| Raó social | Superfícies de Alimentación SA |
| NIF | A08586539 |
| Domicili | Carretera de Montmeló 108 - 120 |
| Localitat | Granollers |
| Codi Postal | 08403 |

2.2. Dades de la instal·lació.

| | |
|-----------------------------|-------------------------------------|
| Raó social | Superfícies de Alimentación SA |
| NIF | A08586539 |
| Domicili | Avinguda de la Pedra Blanca, 12 |
| Localitat | Premià de Dalt |
| Codi Postal | 08338 |
| Referència cadastral | 000205100DF49D0001DI |
| Coordenades UTM | X: 446.632 m Y: 4.594.631 m FUS: 31 |

2.3. Programa d'incentius segons bases reguladores del RD477/2021

| | |
|-----------------------------|------------|
| Programa d'incentius | Programa 1 |
|-----------------------------|------------|

3. Pla estratègic.

3.1. Origen i lloc de fabricació dels principals components de la instal·lació, criteris de qualitat i impacte medi ambiental.

3.1.1. Mòduls solars.

Els mòduls fotovoltaics seleccionats són fabricats per JA Solar sota la denominació JAM60S20-380/MR de 380 Wp.

JA Solar és un fabricant internacional d'origen xinès de referència en l'àmbit de la fabricació de mòduls solars fotovoltaics, el qual compleix tots els requeriments de qualitat, salut, seguretat i medi ambient aplicables dins el territori de la Unió Europa i el territori Espanyol.

El panells solars que s'instal·laran en el present projecte estaran fabricats a la Xina.

S'annexen a aquest document els certificats corresponents al compliment de:

- Marcatge CE.
- Certificació TÜV.
- IEC 61215.
- EN IEC 61730.
- EN 61000.
- EN 61215

Les garanties ofertes per JA Solar en els seus mòduls solars són de 12 anys de producte i 25 anys de garantia lineal de producció, les quals cobreixen les nostres expectatives de qualitat.

Així mateix JA Solar, està classificada en la segona posició del llistat de fabricants TIER 1 que publica trimestralment Bloomberg Energy Finance, i que classifica aquells fabricants amb major

volum de fabricació, major nombre de panells solars instal·lats i que són bancables pels principals bancs.

Aquest factor ha estat determinant donat que formar part d'aquest llistat s'entén que és indicador d'una suficient solvència tècnica i econòmica la qual que permet afrontar les garanties ofertes en cas de necessitat.

L'impacte mediambiental durant el procés de fabricació dels panells solars queda recollit en el certificat que s'adjunta en el annex d'aquest document i que certifica l'emissió de 557,564 kg eq CO₂ per cada kW de panell solar fabricat. A la vegada aquest certificat mostra la localització de les fàbriques de producció dels panells solars.

3.1.2. Inversor

La present instal·lació compta inversor de 100 kW de potència. L'inversor seleccionat és del fabricant Huawei sota la denominació Huawei SUN2000-100KTL-M1.

Huawei és un fabricant internacional d'origen Xinès de referència mundial en l'àmbit tecnològic i en l'actualitat un dels fabricants amb major volum de producció d'inversors solars a nivell mundial.

Aquest fabricant compleix tots els requeriments de qualitat, salut, seguretat i medi ambient aplicables dins el territori de la Unió Europa i el territori espanyol. S'annexen a aquest document els certificats corresponents al compliment de:

- Marcatge CE.
- RD 244/2019.
- RD 413/2014.
- RD 1699/2011
- RD 661/2007.
- RD 1663/2000.
- IEC 61727.
- IEC 62116.
- IEC 60068.
- IEC 61683.
- UNE206007-1 IN:2013.
- EN 50549.

- DIN EN 6100-6-2.
- DIN EN 61000-6-4.
- ISO14001

L'inversor seleccionat té una garantia de producte 10 anys la qual compleix les expectatives de qualitat que es plantegen pel present projecte.

Aquest inversor compta amb un complet sistema de monitoratge associat que permet el seguiment en temps real de les corbes de producció I-V de cada entrada en corrent contínua, de manera que simplifica molt les feines d'operació i manteniment de la instal·lació solar i permet localitzar de manera ràpida qualsevol incidència en el camp solar.

3.1.3. Estructura

L'estructura de subjecció és fabricada pel fabricant S-Flex amb la denominació S-Flex LeichtMount Rail 2.0 i consisteix a una estructura autoportant aerodinàmica que permet donar inclinació als mòduls solars sense haver de perforar la coberta.

S-Flex és un fabricant europeu d'origen Alemany de referència especialitzat en la fabricació d'estructura destinades a aplicacions en l'àmbit fotovoltaic. Els seus productes compleixen els requeriments de qualitat, salut, seguretat i medi ambient, aplicables dins el territori de la Unió Europa i el territori Espanyol. S'annexen a aquest document els certificats corresponents al compliment de:

- Certificat MCS012.
- ISO 9001.

Les estructures seleccionades tenen una garantia de producte 10 anys la qual compleix les expectatives de qualitat que es plantegen pel present projecte.

3.1.4 Monitoratge

El sistema de monitoratge a instal·lar serà format per l'equip de mesura de consum Smart Power Sensor de Huawei i per l'enregistrador de dades intel·ligent SmartLogger 3000A de Huawei.

El sistema seleccionat proporciona informació del consum i la generació en temps real i les dades que recull poden ser consultades a través de la plataforma que el fabricant posa a disposició.

Adicionalment, s'instal·larà una estació meteorològica que permetrà obtenir dades d'irradiació solar, temperatura ambient i temperatura dels mòduls fotovoltaics.

Annex a aquest document s'adjunten els certificats de qualitat per ambdós equips.

3.1.5. Cablejat CC

El cablejat solar escollit és fabricat per TOP CABLE. Es tracta d'un proveïdor i fabricant nacional amb seu a Rubí, Barcelona que s'especialitza a la fabricació de cablejat elèctric.

El cablejat que comercialitza compta la certificació TÜV així com la màxima certificació CPR solar amb la qual cosa es garanteixen els nivells més alts de seguretat per a instal·lacions sobre coberta.

3.1.6. Cablejat CA

El cablejat que correspon al traçat de CA és fabricat per Prysmian Group. Es tracta d'un fabricant internacional amb seu a Milan (Itàlia) i filial a Vilanova i la Geltrú. S'especialitza a la fabricació de cablejat elèctric per aplicacions als sectors de l'energia i les telecomunicacions.

Els seus productes compten amb la certificació AENOR amb la qual es garanteixen els requeriments de qualitat, salut, seguretat i medi ambient, aplicables dins el territori espanyol.

3.1.7. Proteccions

Les proteccions escollides proven del fabricant Hyundai. Es tracta d'un fabricant internacional d'origen Coreà de referència mundial en l'àmbit d'enginyeria que comercialitza els seus productes a Espanya mitjançant l'empresa Procoel.

Disposa dels certificats tant pel marcatge CE com certificació DEKRA per tots els seus productes.

3.2 Criteris de qualitat o durabilitat escollits per seleccionar els principals components de la instal·lació.

3.2.1 Mòduls Solars

Els mòduls solars escollits són produïts per un dels fabricants més rellevants del sector i amb major volum de vendes a nivell mundial.

Es tracta de mòduls de mitja cel·la (amb 120 cel·les en total) que incorporen la tecnologia PERC per maximitzar el rendiment (el rendiment del mòdul JAM60S20-380/MR és del 20,3%).

Les seves característiques s'ajusten a les necessitats de la instal·lació i, permeten maximitzar la potència fotovoltaica instal·lada per unitat de superfície ocupada mantenint un preu molt competitiu al mercat actual.

3.2.2 Inversor Solar

L'inversor solar escollit és el Huawei SUN2000-100KTL-M1 de 100 kWn. És un inversor d'alt rendiment dissenyat per a instal·lacions fotovoltaïques industrials de gran potència i s'ajusta als requeriments de la instal·lació dissenyada gràcies a l'elevat nombre de seguidors MPPT (10 seguidors MPPT i 2 entrades per cadascun) dels quals disposa.

Adicionalment, aquest inversor incorpora les proteccions de CC necessàries per a protegir cada string.

Es tracta d'un inversor amb un preu molt competitiu en el mercat actual i equivalent al d'altres fabricants de referència al sector.

3.3 Interoperabilitat de la instal·lació i capacitat d'oferir serveis al sistema.

La present instal·lació no inclou cap sistema d'emmagatzematge, motiu pel qual no tindrà capacitat d'oferir serveis de recolzament al sistema elèctric.

3.4 Efecte tractor sobre PYMES i autònoms.

La present instal·lació serà executada per SolarTradex S.L., enginyeria ubicada a Mataró que dóna treball de manera permanent a 54 persones.

SolarTradex S.L. és una empresa integrada verticalment des de la fase d'enginyeria fins a la fase d'execució de l'obra i s'encarregarà de dur a terme totes les tasques d'enginyeria, subministrament, legalització i instal·lació necessàries per a dur a terme la instal·lació. La facturació corresponent a aquest projecte és de 90.787,21€ (IVA exclòs).

Així mateix, s'estima un termini de 4 setmanes amb un total de 4 instal·ladors per completar les feines d'instal·lació i posada en servei de la planta solar.

Addicionalment, es important considerar que els principals materials de la instal·lació solar han estat comprats al distribuïdor especialitzat AMARA amb seu a Espanya i a BAYWARE, filial espanyola del distribuïdor alemany de material solar del mateix nom.

Tant AMARA com BAYWARE són grans empreses i, per tant, no és necessari considerar-ne la facturació a efectes d'aquest informe.

Pel transport dels materials comprats es contractaran els serveis de transportistes locals.

4. Justificació del compliment de no causar danys a cap dels objectius medi ambientals establerts al Reglament (UE) 2020/852 del Parlament Europeu i del Consell de 18 juny de 2020.

A l'article 9 del Reglament (UE) 2020/852 del Parlament Europeu i del Consell de 18 juny de 2020 relatiu a l'establiment d'un marc per facilitar les inversions sostenibles, i pel que es modifica el Reglament (UE) 2019/2088 s'estableixen els objectius medi ambientals esmenats a continuació:

- *Mitigació del canvi climàtic.*
- *Adaptació al canvi climàtic.*
- *Ús sostenible i protecció dels recursos hídrics i marins.*
- *Transició en vers una economia circular.*
- *Prevenició i control de la contaminació.*
- *Protecció i recuperació de la biodiversitat.*

S'afirma que la present instal·lació no afecta ni perjudica en cap cas els objectius medi ambientals establerts al Reglament (UE) 2020/852; donat que es tracta d'una instal·lació fotovoltaica que promourà un desenvolupament sostenible mitjançant la utilització de fonts renovables per la generació d'energia elèctrica.

Adicionalment es considera que la present instal·lació contribueix substancialment als següents dos objectius medi ambientals:

- *Contribució substancial a la mitigació del canvi climàtic i adaptació al canvi climàtic:*
S'estima una producció anual per la instal·lació de 190.681 kWh, aquesta generació pot suposar l'estalvi de fins 45,86 tones de CO₂ equivalent, de forma anual, segons el factor d'emissió del mix de la xarxa elèctrica espanyola per la generació d'energia elèctrica publicat per la Comissió Nacional dels Mercats i la Competència (CNMC).

5. Valorització de residus

El present projecte no comporta cap tipus d'obra civil, així doncs no procedeix justificar el compliment de la valorització del 70% dels residus de construcció i demolició generats en les obres civils realitzades.

No obstant això, durant l'execució de l'obra es generaran altres tipus de residus, els quals es detallen a continuació.

La següent taula presenta la tipologia de residus generats, les quantitats generades, la classificació per codi LER i el seu percentatge de valorització:

| RESIDU | CODI LER | QUANTITAT | % VALORITZACIÓ |
|-----------------------|-----------------|------------------|-----------------------|
| Palets de fusta | 150103 | 420 kg | 93% |
| Plàstic per embolicar | 170203 | 500 g | 91% |
| Caixes de cartró | 150101 | 25 kg | 92% |
| Cable de coure | 170411 | 500 g | 92% |
| Altres plàstics | 170203 | 500 g | 74% |

La valorització dels residus generats durant les feines d'instal·lació de la planta solar serà sempre superior al 70%.

Annex a aquest document s'adjunta el certificat de compromís de recollida i gestió dels residus generats per part del gestor der residus Recuperacions Masnou S.L.

**Certificat de compromís de
recollida i gestió dels residus
generats**



RECUPERACIONS MASNOU SL
B60771201
Pol. Ind. Molí de les Planes
C/Rec del Molí 3-5
08470 Sant Celoni (Barcelona)

Promotor Projecte: **Superfícies de Alimentación SA**

Nom Projecte: **Supermercat Sorli Premià de Dalt**

Empresa instal·ladora: **SolarTradex**

En Salvador Masnou i Oms amb DNI. nº 77295371-F, com a representant de l'empresa Recuperacions Masnou, SL amb domicili fiscal al Polígon Industrial Molí de les Planes, al carrer Rec del Molí 3-5 de Sant Celoni (08470 Barcelona) amb CIF.: B-60771201.

CERTIFICA QUE:

Recuperacions Masnou, S.L., empresa autoritzada per l'Agència de Residus de Catalunya per la gestió i transport de residus (codi gestor núm.: E-203.96 i E-1226.11 i codi transportista T-432), realitzarà el servei de recollida i gestió dels següents residus que es generaran a l'obra a les instal·lacions que l'empresa Superfícies de Alimentacion, SA té ubicades a Premià de mar:

| RESIDU | CODI LER | QUANTITAT | % VALORITZACIÓ |
|-----------------------|----------|-----------|----------------|
| Palets de fusta | 150103 | 420kg | 93% |
| Plàstic per embolicar | 170203 | 500g | 91% |
| Caixes de cartró | 150101 | 25kg | 92% |
| Cable de coure | 170411 | 500g | 92% |
| Altres plàstics | 170203 | 500g | 74% |

I perquè quedi constància es redacta aquests certificat, a Sant Celoni a 3 de novembre de 2021.

Salvador Masnou i Oms



RECUPERACIONS MASNOU SL
B60771201
Pol. Ind. Molí de les Planes
C/Rec del Molí 3-5
08470 Sant Celoni (Barcelona)

Recuperacions Masnou, SL

Certificat emissions de CO2 durant el procés de fabricació dels panells solars

Evaluation Carbone simplifiée

ECS CRE4 N°022-2021_003

Titulaire du certificat :

JA SOLAR Technology Co. Ltd
E6/E8 Plot Minhang Export
Processing Zone – Feng Xian
201401 Shanghai République de Chine

Sites de production modules :

JA SOLAR Technology Co. Ltd
J N° 118, Lane 3111, West
Huancheng Road, Fengxian District,
201401, Shanghai, - CHINA

Sites de production wafers :

JING HAI YANG SEMICONDUCTOR MATERIALS Co, Ltd
N°.6, Huaihai Road, Economic Development Zone,
Donghai County,
Lianyungang City, Jiangsu Province, P.R. China

Identification unique du site : 1

Identification unique du site : 1

Sites de production cellules :

JA SOLAR Malaysia Sdn. Bhd
Lot 17001 Medan Bayan Lepas,
Kawasan Perindustrian Bayan Lepas,
Mukim 12,D.B.D. 11900 Pulau Pinang,
Malaysia.

JA Solar Technology Yiwu Co., Ltd.
165 Tongze Road, Yiting Town, Yiwu
City, Zhejiang Province, China

Identification unique du site : 3

JA Solar Technology Yangzhou Co., Ltd.
No.1 Jian hua RD Development
Area, Yang Zho,
Jiang Su Province, PR, China

Identification unique du site : 2

JA Solar Co., Ltd.
5th Jinglong Industrial Park, No 123
Xinxing Road, Ningjin, Xingtai, Hebei,
China

Identification unique du site : 1

Identification unique du site : 4

Produits concernés (modules de la production courante) :

Modules monocristallins demi cellules PERC: **JAM60S20/MR** (365W à 390W) **JAM72S20/MR** (445W à 470W)

Méthodologie :

Cahier des charges de l'appel d'offres portant sur la réalisation et l'exploitation d'installations :

- de production d'électricité à partir de l'énergie solaire «Centrales au sol de puissance comprise entre 500 kWc et 30 MWc » (Cahier des Charges modifié du 05/09/2019) le présent certificat est accepté à partir de la sixième période de candidature de l'Appels d'offres.
- de production d'électricité à partir de l'énergie solaire « Centrales sur bâtiments, serres et hangars agricoles et ombrières de parking de puissance comprise entre 100 kWc et 8 MWc » (CDC du 18/06/2019) : le présent certificat est accepté à partir de la septième période de candidature de l'Appels d'offres.
- de production d'électricité à partir d'énergies renouvelables en autoconsommation et situées en métropole continentale (Cahier des Charges modifié du 18/06/2019). le présent certificat est accepté à partir de la cinquième période de candidature de l'Appels d'offres.
- de production d'électricité à partir de l'énergie solaire « transition énergétique du territoire de Fessenheim » (Cahier des Charges modifié du 07/10/2019). Le présent certificat est accepté à partir de la deuxième période de candidature de l'Appels d'offres.
- de production d'électricité à partir de l'énergie solaire et situées dans les zones non interconnectées (Cahier des Charges du 12/07/2019)
- de production d'électricité à partir d'énergies renouvelables en autoconsommation et situées dans les zones non interconnectées (Cahier des Charges du 12/07/2019)

Inventaire de la composition des modules :

| | JAM60S20/MR | JAM72S20/MR |
|---------------------------|-----------------|-------------|
| Technologie | Monocristalline | |
| Puissance en W | 365 à 390 | 445 à 470 |
| Polysilicium (kg) | 0,67 | 0,81 |
| Lingots (kg) | 0,67 | 0,81 |
| Wafers (nbre) | 69,59 | 83,50 |
| Cellules (nbre) | 69,59 | 83,50 |
| Modules (m ²) | 1,84 | 2,20 |
| Verre (kg) | 14,75 | 17,62 |
| Trempe (kg) | 14,75 | 17,62 |
| EVA (kg) | 2,31 | 2,76 |
| PET (kg) | 0,92 | 1,10 |

(Quantité pour un module)

Origine des sites de production :

| | Coefficients répartition / Sites fabrication / Pays fabrication | |
|-----------------|--|-------------|
| | JAM60S20/MR | JAM72S20/MR |
| Polysilicium | 33.5% Burghausen –Allemagne 33.5% Michigan - Etats-Unis 33% Recyclé Baotou - Chine | |
| Lingots | 100% Baotou – Chine | |
| Wafers | 100% Lianyungang - Chine | |
| Cellules | 100% Chine & Malaisie ⁽¹⁾ | |
| Modules | 100% Shanghai, Fengxian – Chine | |
| Verre et Trempe | 100% Hefei – Chine* | |
| EVA | 100% Chine ⁽¹⁾ | |
| PET | 100% Chine ⁽¹⁾ | |

(1) L'origine de ces composants est de plusieurs sites de fabrication, ce sont les caractéristiques techniques les plus pénalisantes qui ont été retenues pour les calculs du présent certificat.

*Pas de preuve d'approvisionnement pour les nouvelles tailles de verre

CERTISOLIS TC atteste de l'origine des composants déclarés pour les produits visés ci-dessus. Certaines données doivent être vérifiées au cours d'un audit documentaire complémentaire.

Résultats :

| | JAM60S20/MR | | | | | | JAM72S20/MR | | | | | |
|----------------------------------|-------------|---------|---------|---------|---------|---------|-------------|---------|---------|---------|---------|---------|
| | 365W | 370W | 375W | 380W | 385W | 390W | 445W | 450W | 455W | 460W | 465W | 470W |
| Puissance en W (Tolérance 0/+5W) | 365W | 370W | 375W | 380W | 385W | 390W | 445W | 450W | 455W | 460W | 465W | 470W |
| G (kg eq CO2/kWc) | 580,478 | 572,633 | 564,998 | 557,564 | 550,323 | 543,268 | 569,513 | 563,185 | 556,996 | 550,942 | 545,018 | 539,220 |

Détail du calcul :

TEST - CERTIFICATION PHOTOVOLTAÏQUE

| | | Monocristallins | | | | | | | | | | | |
|-------------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------|
| | | JAM60S20/MR | | | | | | JAM72S20/MR | | | | | |
| | | 365W | 370W | 375W | 380W | 385W | 390W | 445W | 450W | 455W | 460W | 465W | 470W |
| Gi | Polysilicium | 209,515 | 206,684 | 203,928 | 201,245 | 198,631 | 196,085 | 206,219 | 203,928 | 201,687 | 199,495 | 197,350 | 195,250 |
| | Lingots | 120,666 | 119,035 | 117,448 | 115,902 | 114,397 | 112,931 | 118,767 | 117,448 | 116,157 | 114,895 | 113,659 | 112,450 |
| | Wafers | 29,042 | 28,650 | 28,268 | 27,896 | 27,534 | 27,181 | 28,586 | 28,268 | 27,957 | 27,653 | 27,356 | 27,065 |
| | Cellules | 101,119 | 99,752 | 98,422 | 97,127 | 95,866 | 94,637 | 99,528 | 98,422 | 97,341 | 96,283 | 95,247 | 94,234 |
| | Modules | 36,922 | 36,423 | 35,938 | 35,465 | 35,004 | 34,556 | 34,880 | 34,492 | 34,113 | 33,742 | 33,379 | 33,024 |
| | Verre | 47,518 | 46,876 | 46,251 | 45,642 | 45,049 | 44,472 | 46,558 | 46,041 | 45,535 | 45,040 | 44,556 | 44,082 |
| | Verre trempé | 9,920 | 9,786 | 9,655 | 9,528 | 9,405 | 9,284 | 9,720 | 9,612 | 9,506 | 9,403 | 9,302 | 9,203 |
| | EVA | 18,622 | 18,370 | 18,125 | 17,887 | 17,654 | 17,428 | 18,246 | 18,043 | 17,845 | 17,651 | 17,461 | 17,275 |
| | PET | 7,154 | 7,058 | 6,964 | 6,872 | 6,783 | 6,696 | 7,010 | 6,932 | 6,856 | 6,781 | 6,708 | 6,637 |
| G (kg eq CO2/kWc) | 580,478 | 572,633 | 564,998 | 557,564 | 550,323 | 543,268 | 569,513 | 563,185 | 556,996 | 550,942 | 545,018 | 539,220 | |

Typologie du numéro de série des modules :
YY M CCC NN Y1 XXXXXX

YYM : date de fabrication

CCC : type de cellule

NN : nombre de cellules

Y1 : identification site de production

XXXXXX : numéro de série chronologique pour chaque module

Code ECS : ECS-ABCD

A : Identification unique du site de fabrication des lingots (1 : Baotou)

B : Identification unique du site de fabrication des wafers (1 : Donghai, Lianyungan)

C : Identification unique du site de fabrication des cellules (1: Ningjin, 2: Yangzhou, 3: Yiwu, 4: Malaysia)

D : Identification unique du site de fabrication des modules (1: Fengxian, Shanghai)

Informations :

Les calculs ont été effectués sur la base des valeurs par défaut (Tableau 2 : Valeurs des émissions de GES en CO2eq pour la fabrication des composants) de la méthodologie citée ci-dessus à l'exception des valeurs :

- de la valeur du procédé de fabrication du « Poly-Si recyclé » (Site de Baotou – Chine) - validée par l'ADEME le 28/02/2021,
- du procédé de fabrication du composant « PolySi » (Site de Burghausen – Allemagne et Moses Lake - USA) - validée par l'ADEME le 12/12/2018,
- de la valeur du procédé de fabrication du « Ingot processing mono » (Site de Baotou – Chine) - validée par l'ADEME le 28/02/2021,
- de la valeur du procédé de fabrication du « Wafer processing mono 156x156mm » (Site de Lianyungang – Chine) - validée par l'ADEME le 28/02/2021,
- de la valeur du procédé de fabrication du « Modules mono or multi 60 full or half cells » (Site de Shanghai, Fengxian – Chine) - validée par l'ADEME le 28/02/2021,
- de la valeur du procédé de fabrication du « Modules mono or multi 72 full or half cells » (Site de Shanghai, Fengxian – Chine) - validée par l'ADEME le 28/02/2021,

qui sont issues d'une Analyse de cycle de vie récente. Les coefficients GWPij issus d'ACV sont les suivants :

| | GWPij |
|---|--------|
| PolySi recyclé (Chine) | 0,603 |
| PolySi (Allemagne – USA) | 57,559 |
| Ingot processing mono (Chine) | 23,218 |
| Wafer processing mono 156x156mm (Chine) | 0,145 |
| Modules mono or multi 60 full or half cells (Chine) | 7,308 |
| Modules mono or multi 72 full or half cells (Chine) | 7,046 |

Date du dernier audit réalisé par un organisme accrédité sur le site d'assemblage des modules (Shanghai) : Septembre 2020

Validité :

Certificat CRE4 N°022-2021_003 valide du 05/03/2021 au 28/02/2022

Le Bourget-du-lac, le 05 mars 2021

Le Président




Laurent PRIEUR

Certificats de qualitat JA Solar

CE Declaration of Conformity

Directive 2014/35/EU (Low Voltage)



Issuer's name and address:

Shanghai JA Solar Technology Co. Ltd
No 118, Lane 3111, West Huancheng road, Feng Xian District, Shanghai 201401, P.R. CHINA
Tel: +86 21 3718 1000

Product: Crystalline silicon photovoltaic modules

Type designation:

JAM60S10-325/MR, JAM60S10-330/MR, JAM60S10-335/MR, JAM60S10-340/MR, JAM60S10-345/MR, JAM60S10-350/MR, JAM60S10-355/MR,

JAM72S10-390/MR, JAM72S10-395/MR, JAM72S10-400/MR, JAM72S10-405/MR, JAM72S10-410/MR, JAM72S10-415/MR, JAM72S10-420/MR, JAM72S10-425/MR, JAM72S10-430/MR,

JAM60S17-315/MR, JAM60S17-320/MR, JAM60S17-325/MR, JAM60S17-330/MR, JAM60S17-335/MR, JAM60S17-340/MR, JAM60S17-345/MR, JAM60S17-350/MR, JAM60S17-355/MR,

JAM78S10-435/MR, JAM78S10-440/MR, JAM78S10-445/MR, JAM78S10-450/MR, JAM78S10-455/MR, JAM78S10-460/MR, JAM78S10-465/MR,

JAM60D10-320/MB, JAM60D10-325/MB, JAM60D10-330/MB, JAM60D10-335/MB, JAM60D10-340/MB, JAM60D10-345/MB, JAM60D10-350/MB, JAM60D10-355/MB,

JAM72D10-400/MB, JAM72D10-405/MB, JAM72D10-410/MB, JAM72D10-415/MB, JAM72D10-420/MB, JAM72D10-425/MB, JAM72D10-430/MB

JAM78D10-435/MB, JAM78D10-440/MB, JAM78D10-445/MB, JAM78D10-450/MB, JAM78D10-455/MB

JAM60S20-365/MR, JAM60S20-370/MR, JAM60S20-375/MR, JAM60S20-380/MR, JAM60S20-385/MR, JAM60S20-390/MR,

JAM72S20-440/MR, JAM72S20-445/MR, JAM72S20-450/MR, JAM72S20-455/MR, JAM72S20-460/MR, JAM72S20-465/MR, JAM72S20-470/MR

JAM60S21-355/MR, JAM60S21-360/MR, JAM60S21-365/MR, JAM60S21-370/MR, JAM60S21-375/MR, JAM60S21-380/MR, JAM60S21-385/MR, JAM60S21-390/MR

JAM60D20-355/MB, JAM60D20-365/MB, JAM60D20-370/MB, JAM60D20-375/MB, JAM60D20-380/MB, JAM60D20-385/MB, JAM72D20-430/MB, JAM72D20-435/MB, JAM72D20-440/MB, JAM72D20-445/MB, JAM72D20-450/MB, JAM72D20-455/MB,

JAM72D20-460/MB, JAM72D20-465/MB,

JAM54S30-390/MR, JAM54S30-395/MR, JAM54S30-400/MR, JAM54S30-405/MR, JAM54S30-410/MR, JAM54S30-415/MR,

JAM72S30-515/MR, JAM72S30-520/MR, JAM72S30-525/MR, JAM72S30-530/MR, JAM72S30-535/MR, JAM72S30-540/MR, JAM72S30-545/MR, JAM72S30-550/MR,

JAM72D30-515/MB, JAM72D30-520/MB, JAM72D30-525/MB, JAM72D30-530/MB, JAM72D30-535/MB, JAM72D30-540/MB, JAM72D30-545/MB

The designated product is in conformity with the European Directive: 2014/30/EU

Council Directive on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

The technical documentation and full compliance with the standards listed below proved the conformity of the product with the requirements of the above-mentioned EC Directive:

EN IEC 61730-1:2018

EN IEC 61730-1:2018/AC :2018-06

EN IEC 61730-2:2018

JA SOLAR

Shanghai JA Solar Technology Co., Ltd.
No. 118, Lane 3111,
West Huancheng road
Feng Xian District
Shanghai 201401, P. R. China
Tel: +86 (21) 3718 1000

The institute TUV SUD Product Service GmbH, Ridlerstrasse 65, 80339 Munich (Germany) has tested and certified the product.

Certificate No.: N8A072092 0296 Rev.23

Shanghai,
Shanghai JA Solar Technology Co., Ltd.
Global Customer Service Department
March 3, 2021





Product Service

Attestation of Conformity

No. N8A 072092 0296 Rev. 18

Holder of Certificate: **Shanghai JA Solar Technology Co., Ltd.**
No. 118, Lane 3111
West Huancheng Road
Fengxian District
201401 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Product: **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**
Mono-Crystalline Silicon Photovoltaic Module

This Attestation of Conformity is issued on a voluntary basis according to the Low Voltage Directive 2014/35/EU relating to electrical equipment designed for use within certain voltage limits. It confirms that the listed equipment complies with the principal protection requirements of the directive and is based on the technical specifications applicable at the time of issuance. It refers only to the particular sample submitted for testing and certification. For details see: www.tuvsud.com/ps-cert

Test report no.: 704061604115-45

Date, 2020-09-29

(Zhulin Zhang)

Page 1 of 4

After preparation of the necessary technical documentation as well as the EU declaration of conformity the required CE marking can be affixed on the product. The declaration of conformity is issued under the sole responsibility of the manufacturer. Other relevant EU-directives have to be observed.



Attestation of Conformity

No. N8A 072092 0296 Rev. 18

Model(s):

JAM72S10-xxx/MB/1000V, xxx= 395 to 415 in steps of 5;
 JAM60S10-xxx/MB/1000V, xxx= 330 to 345 in steps of 5;
 JAM72S20-xxx/MR/1000V, xxx= 430 to 470 in steps of 5;
 JAM60S20-xxx/MR/1000V, xxx= 355 to 390 in steps of 5;
 JAM72S30-xxx/MR/1000V, xxx= 510 to 550 in steps of 5;
 JAM66S30-xxx/MR/1000V, xxx= 470 to 505 in steps of 5;
 JAM60S30-xxx/MR/1000V, xxx= 435 to 460 in steps of 5;
 JAM60S21-xxx/MR/1000V, xxx= 355 to 375 in steps of 5;

1000 V DC or 1500 V DC Maximum System voltage, Fire Safety Class C Modules:

JAM72S01-xxx/SC, xxx= 320 to 365 in steps of 5;
 JAM60S01-xxx/SC, xxx= 265 to 305 in steps of 5;
 JAM60S01-xxx/PR, xxx= 285 to 325 in steps of 5;
 JAM72S01-xxx/MR, xxx= 365 to 385 in steps of 5;
 JAM60S01-xxx/MR, xxx= 305 to 320 in steps of 5;
 JAM72S03-xxx/PR, xxx= 360 to 395 in steps of 5;
 JAM60S03-xxx/PR, xxx= 300 to 330 in steps of 5;
 JAM72S09-xxx/PR, xxx= 370 to 405 in steps of 5;
 JAM60S09-xxx/PR, xxx= 310 to 335 in steps of 5;
 JAM72S10-xxx/PR, xxx= 380 to 410 in steps of 5;
 JAM60S10-xxx/PR, xxx= 315 to 345 in steps of 5;
 JAM72S10-xxx/MR, xxx= 390 to 420 in steps of 5;
 JAM60S10-xxx/MR, xxx= 325 to 345 in steps of 5;
 JAM78S10-xxx/MR, xxx= 435 to 455 in steps of 5;
 JAM66S10-xxx/MR, xxx= 345 to 380 in steps of 5;
 JAM72S09-xxx/BP, xxx= 375 to 385 in steps of 5;
 JAM60S09-xxx/BP, xxx= 315 to 320 in steps of 5;
 JAM72S10-xxx/BP, xxx= 385 to 400 in steps of 5;
 JAM60S10-xxx/BP, xxx= 320 to 330 in steps of 5;
 JAM72S02-xxx/PR, xxx= 345 to 390 in steps of 5;
 JAM60S02-xxx/PR, xxx= 285 to 325 in steps of 5;
 JAM72S02-xxx/SC, xxx= 320 to 365 in steps of 5;
 JAM60S02-xxx/SC, xxx= 265 to 305 in steps of 5;
 JAM72S02-xxx/MR, xxx= 365 to 385 in steps of 5;
 JAM60S02-xxx/MR, xxx= 305 to 320 in steps of 5;
 JAM72S08-xxx/PR, xxx= 360 to 395 in steps of 5;
 JAM60S08-xxx/PR, xxx= 300 to 330 in steps of 5;
 JAM72S12-xxx/PR, xxx= 365 to 385 in steps of 5;
 JAM60S12-xxx/PR, xxx= 305 to 330 in steps of 5;
 JAM72S17-xxx/PR, xxx= 380 to 390 in steps of 5;
 JAM60S17-xxx/PR, xxx= 315 to 325 in steps of 5;
 JAM72S17-xxx/MR, xxx= 390 to 395 in steps of 5;
 JAM60S17-xxx/MR, xxx= 315 to 335 in steps of 5;
 JAM72S10-xxx/MB, xxx= 395 to 415 in steps of 5;
 JAM60S10-xxx/MB, xxx= 330 to 345 in steps of 5;
 JAM72S20-xxx/MR, xxx= 430 to 470 in steps of 5;
 JAM60S20-xxx/MR, xxx= 355 to 390 in steps of 5;
 JAM78S10-xxx/MR-J, xxx= 435 to 455 in steps of 5;
 JAM72S30-xxx/MR, xxx= 510 to 550 in steps of 5;
 JAM66S30-xxx/MR, xxx= 470 to 505 in steps of 5;
 JAM60S30-xxx/MR, xxx= 435 to 460 in steps of 5;
 JAM60S21-xxx/MR, xxx= 355 to 375 in steps of 5;

1500 V DC Maximum System voltage, Fire Safety Class C Modules:

JAM6(K)-72-xxx/PR/1500V, xxx= 345 to 370 in steps of 5;
 JAM6(K)-60-xxx/PR/1500V, xxx= 285 to 310 in steps of 5;
 JAM6(K)-72-xxx/4BB/1500V, xxx= 320 to 345 in steps of 5;
 JAM6(K)-60-xxx/4BB/1500V, xxx= 265 to 285 in steps of 5;
 JAM72S01-xxx/SC/1500V, xxx= 320 to 365 in steps of 5;
 JAM60S01-xxx/SC/1500V, xxx= 265 to 305 in steps of 5;
 JAM72S01-xxx/PR, xxx= 345 to 390 in steps of 5;

Page 3 of 4

After preparation of the necessary technical documentation as well as the EU declaration of conformity the required CE marking can be affixed on the product. The declaration of conformity is issued under the sole responsibility of the manufacturer. Other relevant EU-directives have to be observed.



Attestation of Conformity

No. N8A 072092 0296 Rev. 18

JAM60S01-xxx/PR/1500V, xxx= 285 to 325 in steps of 5;
 JAM72S01-xxx/MR/1500V, xxx= 365 to 385 in steps of 5;
 JAM60S01-xxx/MR/1500V, xxx= 305 to 320 in steps of 5;
 JAM72S03-xxx/PR/1500V, xxx= 360 to 395 in steps of 5;
 JAM60S03-xxx/PR/1500V, xxx= 300 to 330 in steps of 5;
 JAM72S09-xxx/PR/1500V, xxx= 370 to 405 in steps of 5;
 JAM60S09-xxx/PR/1500V, xxx= 310 to 335 in steps of 5;
 JAM72S10-xxx/PR/1500V, xxx= 380 to 410 in steps of 5;
 JAM60S10-xxx/PR/1500V, xxx= 315 to 345 in steps of 5;
 JAM72S10-xxx/MR/1500V, xxx= 390 to 420 in steps of 5;
 JAM60S10-xxx/MR/1500V, xxx= 325 to 345 in steps of 5;
 JAM78S10-xxx/MR/1500V, xxx= 435 to 455 in steps of 5;
 JAM66S10-xxx/MR/1500V, xxx= 345 to 380 in steps of 5;
 JAM72S09-xxx/BP/1500V, xxx= 375 to 385 in steps of 5;
 JAM60S09-xxx/BP/1500V, xxx= 315 to 320 in steps of 5;
 JAM72S10-xxx/BP/1500V, xxx= 385 to 400 in steps of 5;
 JAM60S10-xxx/BP/1500V, xxx= 320 to 330 in steps of 5;
 JAM72S02-xxx/PR/1500V, xxx= 345 to 390 in steps of 5;
 JAM60S02-xxx/PR/1500V, xxx= 285 to 325 in steps of 5;
 JAM72S02-xxx/SC/1500V, xxx= 320 to 365 in steps of 5;
 JAM60S02-xxx/SC/1500V, xxx= 265 to 305 in steps of 5;
 JAM72S02-xxx/MR/1500V, xxx= 365 to 385 in steps of 5;
 JAM60S02-xxx/MR/1500V, xxx= 305 to 320 in steps of 5;
 JAM72S08-xxx/PR/1500V, xxx= 360 to 395 in steps of 5;
 JAM60S08-xxx/PR/1500V, xxx= 300 to 330 in steps of 5;
 JAM72S12-xxx/PR/1500V, xxx= 365 to 385 in steps of 5;
 JAM60S12-xxx/PR/1500V, xxx= 305 to 330 in steps of 5;
 JAM72S17-xxx/PR/1500V, xxx= 380 to 390 in steps of 5;
 JAM60S17-xxx/PR/1500V, xxx= 315 to 325 in steps of 5;
 JAM72S17-xxx/MR/1500V, xxx= 390 to 395 in steps of 5;
 JAM60S17-xxx/MR/1500V, xxx= 315 to 335 in steps of 5;
 JAM72S10-xxx/MB/1500V, xxx= 395 to 415 in steps of 5;
 JAM60S10-xxx/MB/1500V, xxx= 330 to 345 in steps of 5;
 JAM72S20-xxx/MR/1500V, xxx= 430 to 470 in steps of 5;
 JAM60S20-xxx/MR/1500V, xxx= 355 to 390 in steps of 5;
 JAM72S30-xxx/MR/1500V, xxx= 510 to 550 in steps of 5;
 JAM66S30-xxx/MR/1500V, xxx= 470 to 505 in steps of 5;
 JAM60S30-xxx/MR/1500V, xxx= 435 to 460 in steps of 5;
 JAM60S21-xxx/MR/1500V, xxx= 355 to 375 in steps of 5;
 xxx is standing for rated output power at STC

Parameters:

| | |
|-------------------------|--|
| Construction: | Framed or Frameless, with Junction box, Cable and Connectors. |
| Test Laboratory: | Yangzhou Opto-Electrical Products Testing Institute No. 10 West Kaifa Road, Yangzhou 225009 Jiangsu, P. R. China |
| Safety Class: | Class II |
| Maximum System Voltage: | 1500 V DC or 1000 V DC |
| Fire Safety Class: | Class C or Class A according to UL790. |

Tested according to:

EN IEC 61730-1:2018
 EN IEC 61730-1:2018/AC:2018-06
 EN IEC 61730-2:2018
 EN IEC 61730-2:2018/AC:2018-06



Product Service

Attestation of Conformity

No. E8A 072092 0331 Rev. 00

Holder of Certificate: **Shanghai JA Solar Technology Co., Ltd.**
No. 118, Lane 3111
West Huancheng Road
Fengxian District
201401 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Name of Object: **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**
Mono Crystalline Silicon Photovoltaic (PV) Modules

This Attestation of Conformity is issued on a voluntary basis according to the Directive 2014/30/EU relating to electromagnetic compatibility. It confirms that the listed apparatus complies with all essential requirements of the directive and is based on the technical specifications applicable at the time of issuance. It refers only to the particular sample submitted for testing and certification. For details see: www.tuvsud.com/ps-cert

Test report no.: 4840920288900

Date, 2020-09-08

(Jun Bao)

Page 1 of 4

After preparation of the necessary technical documentation as well as the EU Declaration of conformity the required CE marking can be affixed on the product. That Declaration of conformity is issued under the sole responsibility of the manufacturer. Other relevant EU-directives have to be observed.



Attestation of Conformity

No. E8A 072092 0331 Rev. 00

Model(s): JAM72S30-xxx/MR, JAM66S30-xxx/MR, JAM60S30-xxx/MR, JAM72S20-xxx/MR, JAM60S20-xxx/MR, JAM78S10-xxx/MR, JAM72S10-xxx/MR, JAM66S10-xxx/MR, JAM60S10-xxx/MR, JAM72S10-xxx/PR, JAM60S10-xxx/PR, JAM72S09-xxx/PR, JAM60S09-xxx/PR, JAM72S10-xxx/MB, JAM60S10-xxx/MB, JAM60S11-xxx/PR, JAM60S11-xxx/PR(B), JAM60S21-xxx/MR, JAM60S17-xxx/MR, JAM60S17-xxx/PR, xxx is standing for rated output power at STC

Description of Object:

| Maximum System Voltage: 1500 V DC or 1000 V DC | |
|--|--|
| Model | Rated Output Power at STC |
| JAM72S30-520/MR, JAM72S30-525/MR, JAM72S30-530/MR, JAM72S30-535/MR, JAM72S30-540/MR, JAM72S30-545/MR | 520 W, 525 W, 530 W, 535 W, 540 W, 545 W |
| JAM66S30-475/MR, JAM66S30-480/MR, JAM66S30-485/MR, JAM66S30-490/MR, JAM66S30-495/MR, JAM66S30-500/MR | 475 W, 480 W, 485 W, 490 W, 495 W, 500 W |
| JAM60S30-435/MR, JAM60S30-440/MR, JAM60S30-445/MR, JAM60S30-450/MR | 435 W, 440 W, 445 W, 450 W |
| JAM72S20-435/MR, JAM72S20-440/MR, JAM72S20-445/MR, JAM72S20-450/MR, JAM72S20-455/MR, JAM72S20-460/MR, JAM72S20-465/MR, JAM72S20-470/MR | 435 W, 440 W, 445 W, 450 W, 455 W, 460 W, 465 W, 470 W |
| JAM60S20-355/MR, JAM60S20-360/MR, JAM60S20-365/MR, JAM60S20-370/MR, JAM60S20-375/MR, JAM60S20-380/MR, JAM60S20-385/MR, JAM60S20-390/MR | 355 W, 360 W, 365 W, 370 W, 375 W, 380 W, 385 W, 390 W |
| JAM78S10-435/MR, JAM78S10-440/MR, JAM78S10-445/MR, JAM78S10-450/MR, JAM78S10-455/MR, | 435 W, 440 W, 445 W, 450 W, 455 W |
| JAM72S10-400/MR, JAM72S10-405/MR, JAM72S10-410/MR, JAM72S10-415/MR, JAM72S10-420/MR | 400 W, 405 W, 410 W, 415 W, 420 W |
| JAM66S10-360/MR, JAM66S10-365/MR, JAM66S10-370/MR, JAM66S10-375/MR, JAM66S10-380/MR | 360 W, 365 W, 370 W, 375 W, 380 W |



Product Service

Attestation of Conformity

No. E8A 072092 0331 Rev. 00

Safety class:

II

**Tested
according to:**

EN 61000-6-2:2005
EN 61000-6-3:2007/A1:2011

Page 4 of 4

After preparation of the necessary technical documentation as well as the EU Declaration of conformity the required CE marking can be affixed on the product. That Declaration of conformity is issued under the sole responsibility of the manufacturer. Other relevant EU-directives have to be observed.



Product Service

CERTIFICATE

No. Z2 072092 0295 Rev. 29

Holder of Certificate: **Shanghai JA Solar Technology Co., Ltd.**
No. 118, Lane 3111
West Huancheng Road
Fengxian District
201401 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:



Product: **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**
Mono-Crystalline Silicon Photovoltaic Module

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 704061604115-44

Valid until: 2025-09-20

Date, 2020-09-21

(Zhulin Zhang)

CERTIFICATE

No. Z2 072092 0295 Rev. 29

Model(s):

1500 V DC Maximum System voltage, Fire Safety Class A or C Modules:
JAM72D00-xxx/BP/1500V, JAM72D00-xxx/BP, xxx= 330 to 385 in steps of 5;
JAM60D00-xxx/BP/1500V, JAM60D00-xxx/BP, xxx= 275 to 320 in steps of 5;
JAM60D00-xxx/PR/1500V, JAM60D00-xxx/PR, xxx= 285 to 320 in steps of 5;
JAM72D00-xxx/PR/1500V, JAM72D00-xxx/PR, xxx= 340 to 385 in steps of 5;
JAM60D00-xxx/MB/1500V, JAM60D00-xxx/MB, xxx= 310 to 315 in steps of 5;
JAM72D00-xxx/MB/1500V, JAM72D00-xxx/MB, xxx= 370 to 380 in steps of 5;
JAM72D09-xxx/BP/1500V, JAM72D09-xxx/BP, xxx= 360 to 400 in steps of 5;
JAM60D09-xxx/BP/1500V, JAM60D09-xxx/BP, xxx= 300 to 345 in steps of 5;
JAM72D10-xxx/MB/1500V, JAM72D10-xxx/MB, xxx= 385 to 420 in steps of 5;
JAM60D10-xxx/MB/1500V, JAM60D10-xxx/MB, xxx= 320 to 350 in steps of 5;
JAM72D10-xxx/BP/1500V, JAM72D10-xxx/BP, xxx= 385 to 415 in steps of 5;
JAM60D10-xxx/BP/1500V, JAM60D10-xxx/BP, xxx= 320 to 345 in steps of 5;
JAM66D10-xxx/MB/1500V, JAM66D10-xxx/MB, xxx= 360 to 380 in steps of 5;
JAM78D10-xxx/MB/1500V, JAM78D10-xxx/MB, xxx= 435 to 455 in steps of 5;
JAM72D20-xxx/MB/1500V, JAM72D20-xxx/MB, xxx= 430 to 465 in steps of 5;
JAM60D20-xxx/MB/1500V, JAM60D20-xxx/MB, xxx= 355 to 385 in steps of 5;
JAM72D10-xxx/TB/1500V, JAM72D10-xxx/TB, xxx= 400 to 420 in steps of 5;
JAM60D10-xxx/TB/1500V, JAM60D10-xxx/TB, xxx= 335 to 350 in steps of 5;
JAM72D30-xxx/MB/1500V, JAM72D30-xxx/MB, xxx=505 to 545 in steps of 5;
JAM66D30-xxx/MB/1500V, JAM66D30-xxx/MB, xxx=465 to 500 in steps of 5;
JAM60D30-xxx/MB/1500V, JAM60D30-xxx/MB, xxx=435 to 455 in steps of 5;

1000 V DC Maximum System voltage, Fire Safety Class C Modules:

JAM6(K)-72-xxx/PR, xxx= 345 to 370 in steps of 5;
JAM6(K)-60-xxx/PR, xxx= 285 to 310 in steps of 5;
JAM6(K)-72-xxx/4BB, xxx= 320 to 345 in steps of 5;
JAM6(K)-60-xxx/4BB, xxx= 265 to 285 in steps of 5;
JAM72S01-xxx/SC/1000V, xxx= 320 to 365 in steps of 5;
JAM60S01-xxx/SC/1000V, xxx= 265 to 305 in steps of 5;
JAM72S01-xxx/PR/1000V, xxx= 345 to 390 in steps of 5;
JAM60S01-xxx/PR/1000V, xxx= 285 to 325 in steps of 5;
JAM72S01-xxx/MR/1000V, xxx= 365 to 385 in steps of 5;
JAM60S01-xxx/MR/1000V, xxx= 305 to 320 in steps of 5;
JAM72S03-xxx/PR/1000V, xxx= 360 to 395 in steps of 5;
JAM60S03-xxx/PR/1000V, xxx= 300 to 330 in steps of 5;
JAM72S09-xxx/PR/1000V, xxx= 370 to 405 in steps of 5;
JAM60S09-xxx/PR/1000V, xxx= 310 to 335 in steps of 5;
JAM72S10-xxx/PR/1000V, xxx= 380 to 410 in steps of 5;
JAM60S10-xxx/PR/1000V, xxx= 315 to 345 in steps of 5;
JAM72S10-xxx/MR/1000V, xxx= 390 to 420 in steps of 5;
JAM60S10-xxx/MR/1000V, xxx= 325 to 345 in steps of 5;
JAM78S10-xxx/MR/1000V, xxx= 435 to 455 in steps of 5;
JAM66S10-xxx/MR/1000V, xxx= 345 to 380 in steps of 5;
JAM72S09-xxx/BP/1000V, xxx= 375 to 385 in steps of 5;
JAM60S09-xxx/BP/1000V, xxx= 315 to 320 in steps of 5;
JAM72S10-xxx/BP/1000V, xxx= 385 to 400 in steps of 5;
JAM60S10-xxx/BP/1000V, xxx= 320 to 330 in steps of 5;
JAM72S02-xxx/PR/1000V, xxx= 345 to 390 in steps of 5;
JAM60S02-xxx/PR/1000V, xxx= 285 to 325 in steps of 5;
JAM72S02-xxx/SC/1000V, xxx= 320 to 365 in steps of 5;
JAM60S02-xxx/SC/1000V, xxx= 265 to 305 in steps of 5;
JAM72S02-xxx/MR/1000V, xxx= 365 to 385 in steps of 5;
JAM60S02-xxx/MR/1000V, xxx= 305 to 320 in steps of 5;
JAM72S08-xxx/PR/1000V, xxx= 360 to 395 in steps of 5;
JAM60S08-xxx/PR/1000V, xxx= 300 to 330 in steps of 5;
JAM72S12-xxx/PR/1000V, xxx= 365 to 385 in steps of 5;
JAM60S12-xxx/PR/1000V, xxx= 305 to 330 in steps of 5;
JAM72S17-xxx/PR/1000V, xxx= 380 to 390 in steps of 5;
JAM60S17-xxx/PR/1000V, xxx= 315 to 325 in steps of 5;
JAM72S17-xxx/MR/1000V, xxx= 390 to 395 in steps of 5;
JAM60S17-xxx/MR/1000V, xxx= 315 to 335 in steps of 5;
JAM72S10-xxx/MB/1000V, xxx= 395 to 415 in steps of 5;
JAM60S10-xxx/MB/1000V, xxx= 330 to 345 in steps of 5;
JAM72S20-xxx/MR/1000V, xxx= 430 to 470 in steps of 5;
JAM60S20-xxx/MR/1000V, xxx= 355 to 390 in steps of 5;
JAM72S30-xxx/MR/1000V, xxx=510 to 550 in steps of 5;
JAM66S30-xxx/MR/1000V, xxx=470 to 505 in steps of 5;
JAM60S30-xxx/MR/1000V, xxx=435 to 460 in steps of 5;

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1000 V DC or 1500 V DC Maximum System voltage,
Fire Safety Class C Modules:

JAM72S01-xxx/SC, xxx= 320 to 365 in steps of 5;
JAM60S01-xxx/SC, xxx= 265 to 305 in steps of 5;
JAM60S01-xxx/PR, xxx= 285 to 325 in steps of 5;
JAM72S01-xxx/MR, xxx= 365 to 385 in steps of 5;
JAM60S01-xxx/MR, xxx= 305 to 320 in steps of 5;
JAM72S03-xxx/PR, xxx= 360 to 395 in steps of 5;
JAM60S03-xxx/PR, xxx= 300 to 330 in steps of 5;
JAM72S09-xxx/PR, xxx= 370 to 405 in steps of 5;
JAM60S09-xxx/PR, xxx= 310 to 335 in steps of 5;
JAM72S10-xxx/PR, xxx= 380 to 410 in steps of 5;
JAM60S10-xxx/PR, xxx= 315 to 345 in steps of 5;
JAM72S10-xxx/MR, xxx= 390 to 420 in steps of 5;
JAM60S10-xxx/MR, xxx= 325 to 345 in steps of 5;
JAM78S10-xxx/MR, xxx= 435 to 455 in steps of 5;
JAM66S10-xxx/MR, xxx= 345 to 380 in steps of 5;
JAM72S09-xxx/BP, xxx= 375 to 385 in steps of 5;
JAM60S09-xxx/BP, xxx= 315 to 320 in steps of 5;
JAM72S10-xxx/BP, xxx= 385 to 400 in steps of 5;
JAM60S10-xxx/BP, xxx= 320 to 330 in steps of 5;
JAM72S02-xxx/PR, xxx= 345 to 390 in steps of 5;
JAM60S02-xxx/PR, xxx= 285 to 325 in steps of 5;
JAM72S02-xxx/SC, xxx= 320 to 365 in steps of 5;
JAM60S02-xxx/SC, xxx= 265 to 305 in steps of 5;
JAM72S02-xxx/MR, xxx= 365 to 385 in steps of 5;
JAM60S02-xxx/MR, xxx= 305 to 320 in steps of 5;
JAM72S08-xxx/PR, xxx= 360 to 395 in steps of 5;
JAM60S08-xxx/PR, xxx= 300 to 330 in steps of 5;
JAM72S12-xxx/PR, xxx= 365 to 385 in steps of 5;
JAM60S12-xxx/PR, xxx= 305 to 330 in steps of 5;
JAM72S17-xxx/PR, xxx= 380 to 390 in steps of 5;
JAM60S17-xxx/PR, xxx= 315 to 325 in steps of 5;
JAM72S17-xxx/MR, xxx= 390 to 395 in steps of 5;
JAM60S17-xxx/MR, xxx= 315 to 335 in steps of 5;
JAM72S10-xxx/MB, xxx= 395 to 415 in steps of 5;
JAM60S10-xxx/MB, xxx= 330 to 345 in steps of 5;
JAM72S20-xxx/MR, xxx= 430 to 470 in steps of 5;
JAM60S20-xxx/MR, xxx= 355 to 390 in steps of 5;
JAM78S10-xxx/MR-J, xxx= 435 to 455 in steps of 5;
JAM72S30-xxx/MR, xxx=510 to 550 in steps of 5;
JAM66S30-xxx/MR, xxx=470 to 505 in steps of 5;
JAM60S30-xxx/MR, xxx=435 to 460 in steps of 5;

1500 V DC Maximum System voltage, Fire Safety Class C Modules:

JAM6(K)-72-xxx/PR/1500V, xxx= 345 to 370 in steps of 5;
JAM6(K)-60-xxx/PR/1500V, xxx= 285 to 310 in steps of 5;
JAM6(K)-72-xxx/4BB/1500V, xxx= 320 to 345 in steps of 5;
JAM6(K)-60-xxx/4BB/1500V, xxx= 265 to 285 in steps of 5;
JAM72S01-xxx/SC/1500V, xxx= 320 to 365 in steps of 5;
JAM60S01-xxx/SC/1500V, xxx= 265 to 305 in steps of 5;
JAM72S01-xxx/PR, xxx= 345 to 390 in steps of 5;
JAM60S01-xxx/PR/1500V, xxx= 285 to 325 in steps of 5;
JAM72S01-xxx/MR/1500V, xxx= 365 to 385 in steps of 5;
JAM60S01-xxx/MR/1500V, xxx= 305 to 320 in steps of 5;
JAM72S03-xxx/PR/1500V, xxx= 360 to 395 in steps of 5;
JAM60S03-xxx/PR/1500V, xxx= 300 to 330 in steps of 5;
JAM72S09-xxx/PR/1500V, xxx= 370 to 405 in steps of 5;
JAM60S09-xxx/PR/1500V, xxx= 310 to 335 in steps of 5;
JAM72S10-xxx/PR/1500V, xxx= 380 to 410 in steps of 5;
JAM60S10-xxx/PR/1500V, xxx= 315 to 345 in steps of 5;
JAM72S10-xxx/MR/1500V, xxx= 390 to 420 in steps of 5;
JAM60S10-xxx/MR/1500V, xxx= 325 to 345 in steps of 5;
JAM78S10-xxx/MR/1500V, xxx= 435 to 455 in steps of 5;
JAM66S10-xxx/MR/1500V, xxx= 345 to 380 in steps of 5;
JAM72S09-xxx/BP/1500V, xxx= 375 to 385 in steps of 5;
JAM60S09-xxx/BP/1500V, xxx= 315 to 320 in steps of 5;
JAM72S10-xxx/BP/1500V, xxx= 385 to 400 in steps of 5;



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JAM60S10-xxx/BP/1500V, xxx= 320 to 330 in steps of 5;
 JAM72S02-xxx/PR/1500V, xxx= 345 to 390 in steps of 5;
 JAM60S02-xxx/PR/1500V, xxx= 285 to 325 in steps of 5;
 JAM72S02-xxx/SC/1500V, xxx= 320 to 365 in steps of 5;
 JAM60S02-xxx/SC/1500V, xxx= 265 to 305 in steps of 5;
 JAM72S02-xxx/MR/1500V, xxx= 365 to 385 in steps of 5;
 JAM60S02-xxx/MR/1500V, xxx= 305 to 320 in steps of 5;
 JAM72S08-xxx/PR/1500V, xxx= 360 to 395 in steps of 5;
 JAM60S08-xxx/PR/1500V, xxx= 300 to 330 in steps of 5;
 JAM72S12-xxx/PR/1500V, xxx= 365 to 385 in steps of 5;
 JAM60S12-xxx/PR/1500V, xxx= 305 to 330 in steps of 5;
 JAM72S17-xxx/PR/1500V, xxx= 380 to 390 in steps of 5;
 JAM60S17-xxx/PR/1500V, xxx= 315 to 325 in steps of 5;
 JAM72S17-xxx/MR/1500V, xxx= 390 to 395 in steps of 5;
 JAM60S17-xxx/MR/1500V, xxx= 315 to 335 in steps of 5;
 JAM72S10-xxx/MB/1500V, xxx= 395 to 415 in steps of 5;
 JAM60S10-xxx/MB/1500V, xxx= 330 to 345 in steps of 5;
 JAM72S20-xxx/MR/1500V, xxx= 430 to 470 in steps of 5;
 JAM60S20-xxx/MR/1500V, xxx= 355 to 390 in steps of 5;
 JAM72S30-xxx/MR/1500V, xxx=510 to 550 in steps of 5;
 JAM66S30-xxx/MR/1500V, xxx=470 to 505 in steps of 5;
 JAM60S30-xxx/MR/1500V, xxx=435 to 460 in steps of 5;
 xxx is standing for rated output power at STC

Parameters:

| | |
|-------------------------|---|
| Construction: | Framed or Frameless, with Junction box, Cable and Connectors. |
| Test Laboratory: | Yangzhou Opto-Electrical Products Testing Institute No. 10 West Kaifa Road, Yangzhou 225009 Jiangsu, P. R. China |
| Safety Class: | Class II |
| Maximum System Voltage: | 1500 V DC or 1000 V DC |
| Fire Safety Class: | Class C or Class A according to UL790. |

Tested according to:

IEC 61215-1(ed.1)
 EN 61215-1:2016
 IEC 61215-1-1(ed.1)
 EN 61215-1-1:2016
 IEC 61215-2(ed.1)
 EN 61215-2:2017
 IEC 61730-1(ed.2)
 EN 61730-1:2018
 IEC 61730-2(ed.2)
 EN 61730-2:2018

Production Facility(ies):

072056, 072092, 079395, 090968, 095903, 101572, 001783,
 102627, 102852, 078666, 090075, 076053, 078439, 104704,
 105721, 105673, 082738, 107160, 104585, 105674, 084671,
 096716, 103323, 068988, 079922, 108228, 108293, 096558,
 108820, 108746, 101631, 108941, 002225

CERTIFICATE

TÜV NORD CERT GmbH

herewith declares that

Shanghai JA Solar Technology Co., Ltd.
No. 118, Lane 3111, West Huangcheng Road
Fengxian District, Shanghai, 201401
P.R. China

is authorized to provide the product mentioned below with the mark as illustrated:



Description of product (details see Annex 2):

PV Modules with 6" Mono-crystalline Silicon Solar Cells

PV Modules with 5" Mono-crystalline Silicon Solar Cells

PV Modules with 6" Poly-crystalline Silicon Solar Cells

PV Modules with half-cut 6" Mono-crystalline Silicon Solar Cells

PV Modules with half-cut 6" Poly-crystalline Silicon Solar Cells

Valid until: 2024-05-13

Tested according to: IEC 61701:2011 / EN 61701:2012 Severity 6.
Registered No.: 44 780 20 406749 - 027R2M2
Manufacturer: see Annex 1
Test Report No.: 492010518.018
File No.: SHV02072/20-02



Essen, 2020-06-08


TÜV NORD CERT GmbH
Certification Body
Consumer Products

Please also pay attention to the information stated overleaf.

Manufacturer:

| | |
|--------------------------------|---|
| Manufacturer 1: | Shanghai JA Solar Technology Co., Ltd. No. 118, Lane 3111, West Huancheng Road, Fengxian District Shanghai 201401, P.R. China |
| Factory inspection report no.: | 862010153.007 |
| Manufacturer 2: | Hefei JA Solar Technology Co., Ltd. No. 999, Chang Ning Road, Hi-tech Zone, Hefei 230088, P.R. China |
| Factory inspection report no.: | 862010241.006 |
| Manufacturer 3: | JA Solar Co., Ltd. Jinglong Street, Ningjin County, 055550 Xingtai, Hebei, P.R. China |
| Factory inspection report no.: | 862010244.006 |
| Manufacturer 4: | JA Solar (Xingtai) Co., Ltd. No. 1688, Chang An Road, Xingtai Economic Development Area Xingtai City, Hebei Province, 054001, P.R. China |
| Factory inspection report no.: | 862010290.004 |
| Manufacturer 5: | Vina Solar Technology Co., Ltd. E12 factory, lot CN-03, Van Trung Industrial park, 21000 Bac Giang Province, Vietnam |
| Factory inspection report no.: | 862010302.004 |
| Manufacturer 6: | Philadelphia Solar LTD. CO Al Qastal Industrial Area, Air freight Road, 11814 Amman, Jordan |
| Factory inspection report no.: | 862010431.001 |

Remark:

Factory inspection is mandatory to be performed annually. Please refer to factory inspection report for detailed information.



TÜV NORD CERT GmbH
Certification Body
Consumer Products

CERTIFICATE

TÜV NORD CERT GmbH

herewith declares that

Shanghai JA Solar Technology Co., Ltd.
No. 118, Lane 3111, West Huangcheng Road
Fengxian District, Shanghai, 201401
P.R. China

is authorized to provide the product mentioned below with the mark as illustrated:



Description of product (details see Annex 2):

PV Modules with 6" Mono-crystalline Silicon Solar Cells

PV Modules with 5" Mono-crystalline Silicon Solar Cells

PV Modules with 6" Poly-crystalline Silicon Solar Cells

PV Modules with half-cut 6" Mono-crystalline Silicon Solar Cells

PV Modules with half-cut 6" Poly-crystalline Silicon Solar Cells

Valid until: 2024-05-13

Tested according to: IEC 62716:2013 / EN 62716:2013 + AC:2014.
Registered No.: 44 780 20 406749 - 026R2M2
Manufacturer: see Annex 1
Test Report No.: 492010517.016
File No.: SHV02072/20-01



Essen, 2020-06-08


TÜV NORD CERT GmbH
Certification Body
Consumer Products

Please also pay attention to the information stated overleaf.

Manufacturer:

| | |
|--------------------------------|---|
| Manufacturer 1: | Shanghai JA Solar Technology Co., Ltd. No. 118, Lane 3111, West Huancheng Road, Fengxian District Shanghai 201401, P.R. China |
| Factory inspection report no.: | 862010153.007 |
| Manufacturer 2: | Hefei JA Solar Technology Co., Ltd. No. 999, Chang Ning Road, Hi-tech Zone, Hefei 230088, P.R. China |
| Factory inspection report no.: | 862010241.006 |
| Manufacturer 3: | JA Solar Co., Ltd. Jinglong Street, Ningjin County, 055550 Xingtai, Hebei, P.R. China |
| Factory inspection report no.: | 862010244.006 |
| Manufacturer 4: | JA Solar (Xingtai) Co., Ltd. No. 1688, Chang An Road, Xingtai Economic Development Area Xingtai City, Hebei Province, 054001, P.R. China |
| Factory inspection report no.: | 862010290.004 |
| Manufacturer 5: | Vina Solar Technology Co., Ltd. E12 factory, lot CN-03, Van Trung Industrial park, 21000 Bac Giang Province, Vietnam |
| Factory inspection report no.: | 862010302.004 |
| Manufacturer 6: | Philadelphia Solar LTD. CO Al Qastal Industrial Area, Air freight Road, 11814 Amman, Jordan |
| Factory inspection report no.: | 862010431.001 |

Remark:

Factory inspection is mandatory to be performed annually. Please refer to factory inspection report for detailed information.

Module types:

PV Modules with half-cut 6" Mono-crystalline Silicon Solar Cells:

- 78 cells: JAM78S10-xxx/MR (xxx=410-455, in steps of 5)
- 78 cells: JAM78S10-xxx/MR-J (xxx=435-455, in steps of 5)
- 72 cells: JAM72S03-xxx/PR (xxx=355-400, in steps of 5)
- 72 cells: JAM72S10-xxx/PR (xxx=365-415, in steps of 5)
- 72 cells: JAM72S17-xxx/PR (xxx=380-415, in steps of 5)
- 72 cells: JAM72S10-xxx/MR (xxx=390-420, in steps of 5)
- 72 cells: JAM72S17-xxx/MR (xxx=390-410, in steps of 5)
- 72 cells: JAM72S10-xxx/BP (xxx=385-400, in steps of 5)
- 72 cells: JAM72S10-xxx/MB (xxx=395-415, in steps of 5)
- 72 cells: JAM72S20-xxx/MR (xxx=430-450, in steps of 5)
- 66 cells: JAM66S10-xxx/MR (xxx=345-380, in steps of 5)
- 60 cells: JAM60S03-xxx/PR (xxx=295-335, in steps of 5)
- 60 cells: JAM60S10-xxx/PR (xxx=305-345, in steps of 5)
- 60 cells: JAM60S17-xxx/PR (xxx=315-345, in steps of 5)
- 60 cells: JAM60S10-xxx/MR (xxx=320-345, in steps of 5)
- 60 cells: JAM60S17-xxx/MR (xxx=320-340, in steps of 5)
- 60 cells: JAM60S10-xxx/BP (xxx=320-330, in steps of 5)
- 60 cells: JAM60S10-xxx/MB (xxx=330-345, in steps of 5)
- 60 cells: JAM60S20-xxx/MR (xxx=355-375, in steps of 5)

Maximum system voltage:

1000V or 1500V

Fuse rating:

20A

Application class:

Class A

Electrical protection class:

Class II

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT



Product Service

CERTIFICATE

No. Z2 072092 0300 Rev. 05

Holder of Certificate: Shanghai JA Solar Technology Co., Ltd.
No. 118, Lane 3111
West Huancheng Road
Fengxian District
201401 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:



Product: Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
Mono-Crystalline Silicon Photovoltaic Module

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. See also notes overleaf.

Test report no.: 704061900211-05

Valid until: 2025-05-19

Date, 2020-05-20 (Zhulin Zhang)



Product Service

CERTIFICATE

No. Z2 072092 0300 Rev. 05

Model(s):

Maximum System Voltage: 1000 V DC

JAM6(K)-72-xxx/PR, xxx=345 to 370 in step of 5
JAM6(K)-60-xxx/PR, xxx=285 to 310 in step of 5
JAM6(K)-72-xxx/4BB, xxx=320 to 345 in step of 5
JAM6(K)-60-xxx/4BB, xxx=265 to 285 in step of 5
JAM72S17-xxx/MR, xxx=390 to 395 in step of 5
JAM60S17-xxx/MR, xxx=315 to 325 in step of 5

Maximum System Voltage: 1500 V DC

JAM6(K)-72-xxx/4BB/1500V, xxx=320 to 345 in step of 5
JAM6(K)-60-xxx/4BB/1500V, xxx=265 to 285 in step of 5
JAM6(K)-72-xxx/PR/1500V, xxx=345 to 370 in step of 5
JAM6(K)-60-xxx/PR/1500V, xxx=285 to 310 in step of 5
JAM72D00-xxx/PR, xxx=340 to 385 in step of 5
JAM60D00-xxx/PR, xxx=285 to 320 in step of 5
JAM72D00-xxx/BP, xxx=330 to 385 in step of 5
JAM60D00-xxx/BP, xxx=275 to 320 in step of 5
JAM72D09-xxx/BP, xxx=360 to 400 in step of 5
JAM60D09-xxx/BP, xxx=300 to 340 in step of 5
JAM72D10-xxx/MB, xxx=385 to 415 in step of 5
JAM60D10-xxx/MB, xxx=320 to 345 in step of 5
JAM66D10-XXX/MB, xxx=360 to 380 in step of 5
JAM78D10-XXX/MB, xxx=440 to 450 in step of 5
JAM72D10-XXX/BP, xxx=385 to 405 in step of 5
JAM60D10-XXX/BP, xxx=320 to 335 in step of 5
JAM72D20-XXX/MB, xxx=430 to 450 in step of 5
JAM60D20-XXX/MB, xxx=355 to 375 in step of 5

Maximum System Voltage: 1000 or 1500 V DC

JAM72S01-xxx/PR, xxx=345 to 390 in step of 5
JAM60S01-xxx/PR, xxx=285 to 325 in step of 5
JAM72S01-xxx/SC, xxx=320 to 365 in step of 5
JAM60S01-xxx/SC, xxx=265 to 305 in step of 5
JAM72S03-xxx/PR, xxx=360 to 395 in step of 5
JAM60S03-xxx/PR, xxx=300 to 330 in step of 5
JAM72S09-xxx/PR, xxx=370 to 405 in step of 5
JAM60S09-xxx/PR, xxx=310 to 335 in step of 5
JAM72S10-xxx/PR, xxx=380 to 410 in step of 5
JAM60S10-xxx/PR, xxx=315 to 345 in step of 5
JAM72S10-xxx/MR, xxx=390 to 420 in step of 5
JAM60S10-xxx/MR, xxx=325 to 345 in step of 5
JAM78S10-xxx/MR, xxx=410 to 455 in step of 5
JAM66S10-xxx/MR, xxx=345 to 380 in step of 5
JAM72S09-xxx/BP, xxx=375 to 385 in step of 5
JAM60S09-xxx/BP, xxx=315 to 320 in step of 5
JAM72S10-xxx/BP, xxx=385 to 400 in step of 5
JAM60S10-xxx/BP, xxx=320 to 330 in step of 5
JAM72S10-xxx/MB, xxx=395 to 415 in step of 5
JAM60S10-xxx/MB, xxx=330 to 345 in step of 5
JAM72S20-xxx/MR, xxx=430 to 450 in step of 5
JAM60S20-xxx/MR, xxx=355 to 375 in step of 5
xxx is standing for rated output power at STC

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ CERTIFICADO ◆ CERTIFICAT



Product Service

CERTIFICATE

No. Z2 072092 0300 Rev. 05

Parameters:

Construction: Framed or Frameless,
with Junction box,
cable and Connectors.
Fire Safety Class: Class C or Class A according to UL790.
Safety Class: Class II
Maximum System Voltage: 1000 V DC or 1500V DC
PID Test Condition: ± 1000 V DC, 96h, 60°C,
85% RH or 96h, 85°C, 85% RH
 ± 1500 V DC, 96h, 85°C, 85% RH
PID testing method according to IEC TS 62804-1:2015

Tested according to:

IEC 61215-1(ed.1)
IEC 61215-1-1(ed.1)
IEC 61215-2(ed.1)
IEC 61730-1(ed.2)
IEC 61730-2(ed.2)
PPP 58042B:2015

Production Facility(ies):

072092, 001783, 072056, 078666, 079395, 090075, 090968,
095903, 101572, 102627, 102852, 104756, 104757, 076053,
078439, 104704, 105721, 105673, 082738, 084671, 096716,
104585, 105674, 107160

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT



Shanghai JA Solar PV Technology Co., Ltd.
No. 36, Jiang Chang San Rd
Zhabei, Shanghai 200436
P. R. China
Tel: +86 (21) 6095 5791
Fax: +86 (21) 6095 5959

Declaration

Date: 04/11/2021
To: Amara-E
Subject: Module Origin

We hereby confirm that the modules JAM72S20MR series and JAM72S30MR series imported to Spain for Amara-E, are all manufactured at JA Solar facilities located in the Popular Republic of China.

These PV Modules are all offering an Standard Product Warranty of 12 years and Performance Warranty of 25 years.

The PV system must be designed in compliance with the industry standard of photovoltaic system and must always take module specifications into considerations. System designers and installers are solely responsible for system design and installation. JA Solar assume no responsibility for the defect which is caused by mounting system or related components.

Shanghai JA Solar PV Technology Co. Ltd.
November 4th, 2021

Certificats de qualitat Huawei



**BUREAU
VERITAS**

Certificate of compliance

Applicant: Huawei Technologies Co., Ltd.
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129
P.R. China

Product: SOLAR INVERTER

Model: SUN2000-100KTL-M1

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with EN50549-2:2019 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

Firmware version: V500R001

Connection rule: EN 50549-2:2019:

Requirements for generating plants to be connected in parallel with distribution networks - Part 2:
Connection to a MV distribution network - Generating plants up to and including Type B

Standards / directives for testing:

FGW TG3, Rev. 25: 2018-09-01

Report number: 19TH0506-EN50549-2_0

Certificate number: U20-0001

Certification scheme: NSOP-0032-DEU-ZE-V01

Date of issue: 2020-01-03



Certification body

Holger Schaffer



Deutsche
Akkreditierungsstelle
D-ZE-12024-01-00

Certification body of Bureau Veritas Consumer Products Services Germany GmbH accredited according to DIN EN ISO/IEC 17065
A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

Type Approval and declaration of compliance with the requirements of EN 50549-2

| | | |
|--|--|-------------------------|
| Manufacturer / applicant: | Huawei Technologies Co., Ltd. Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129 P.R. China | |
| Product description: | Grid-tied photovoltaic inverter | |
| Unit / Type: | SUN2000-100KTL-M1 | |
| MPP DC voltage range [V]: | 200 - 1000 | |
| Input DC voltage range [V]: | 200 - 1100 | |
| Input DC current [A]: | max. 26(A) x 10 | |
| Nominal output AC voltage [V]: | 400 (3~ + (N) + PE, 50/60 Hz) | 480 (3~ + PE, 50/60 Hz) |
| Output AC current [A]: | max. 160,4 | max. 133,7 |
| Nominal active output power [kW]: | 100 | |
| Max. apparent output power [kVA]: | 110 | |
| Firmware version: | V500R001 | |

Description of the structure of the power generation unit:
The input and output are protected by Varistors to Earth. The unit is providing EMC filtering at the output toward mains. The unit does not provide galvanic separation from input to output (transformerless). The output is switched off redundant by the high power switching bridge and a two relays. This assures that the opening of the output circuit will also operate in case of one error.



**BUREAU
VERITAS**

ATTESTATION of conformity with European Directives

Attestation Number: **1988AB0827N057002**

Product: **SOLAR INVERTER**

Brand Name: **HUAWEI**


Model: **SUN2000-100KTL-M1**

Additional Model: **SUN2000-100KTL-INM0**

Applicant: **Huawei Technologies Co., Ltd.**

Address: **Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, China**



| Parameter | SUN2000-100KTL-M1 | SUN2000-100KTL-INM0 |
|------------------|---|--|
| Input | DC 200-1000V, 26A*10 112200W | DC 200-1000V, 26A*10 112200W |
| Output | 220Vac/380Vac, 230Vac/400Vac, 3(N)W+PE 277Vac/480Vac ; 3W+PE, 50/60Hz, 100kW | 240Vac/415Vac, 3(N)W+PE 277Vac/480Vac ; 3W+PE, 50/60Hz, 100kW |
| Max | 168.8A for 380Vac, 160.4A for 400Vac, 133.7A for 480Vac, 110kVA | 154.6A for 415Vac, 133.7A for 480Vac, 110kVA |
| Power | 110kW | 110kW |
| RS485 | Support | Support |
| MBUS | Support | Support |
| USB Smart Dongle | Support | Support |

The submitted sample of the above equipment has been tested for  marking according to following European Directive and standards:
-Electromagnetic Compatibility Directive 2014/30/EU

| Standards | Report Number | Report date |
|---|---------------|---------------|
| EN 55011:2016 + A1:2017 (Group 1) EN 62920:2017 EN 61000-6-3:2007 + A1:2011 (Telecom Port) * EN 61000-6-4:2007 + A1:2011 (Telecom Port) EN 61000-3-12:2011, EN 61000-3-11:2001 EN 61000-6-2:2005 | CE190827N057 | Aug. 30, 2019 |

* The MBUS communication mode or AC 480V power supply mode of Solar Inverter is not apply to this standard.

The referred test report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the specified European Directive.

This verification does not imply assessment of the production of the product. The  marking may be affixed if all relevant and effective European Directives with  are applicable.

Assistant Manager
EMC Department



Name: **Madison Luo**
Data: **Aug. 30, 2019**

This document shall not be reproduced, except in full, without the written approval of
Bureau Veritas Shenzhen Co., Ltd.

Information given in this document is related to the tested specimen of the described electrical sample.

Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd.,
Houjie Town, Dongguan City,
Guangdong 523942, China

Tel.: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



Certificate of compliance

Applicant: Huawei Technologies Co., Ltd.
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129
P.R.C

Product: SOLAR INVERTER

Model: SUN2000-100KTL-M1

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with EN50549-1:2019 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

Applied rules and standards:

EN 50549-1:2019

Requirements for parallel connection of installations with distribution networks - Part 1: Connection to an LV distribution network - Production of installations up to and including Type B

DIN V VDE V 0126-1-1:2006 (4.1 Functional safety)

Automatic disconnection device between a generator and the public low-voltage grid

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

Report number: 19TH0506-EN50549-1_0

Certification Program: NSOP-0032-DEU-ZE-V01

Certificate number: U19-0586

Date of issue: 2019-11-06

Certification body



Holger Schaffer



Certification body Bureau Veritas Consumer Products Services Germany GmbH accreditation to DIN EN ISO/IEC 17065

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

Appendix

Extract from test report according to EN 50549-1

Nr. 19TH0506-EN50549-1_0

Type Approval and declaration of compliance with the requirements of EN 50549-1.

| | |
|-----------------------------------|---|
| Manufacturer / applicant: | Huawei Technologies Co., Ltd. Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129 P.R.C |
| Micro-generator Type | Grid-tied photovoltaic inverter |
| Rated values | SUN2000-100KTL-M1 |
| MPP DC voltage range [V] | 200-1000 |
| Input DC voltage range [V] | 200-1100 |
| Input DC current [A] | Max. 26A*10 |
| Output AC voltage [V] | Max. 160.4 A (400 Vac); Max. 133.7 A (480 Vac) |
| Output AC current [kW] | 100 |
| Output power [kVA] | 110 |
| Firmware version | V500R001 |
| Measurement period: | 2019-09-30 to 2019-10-22 |

Description of the structure of the power generation unit:

The power generation unit is equipped with a PV and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

Setting of the interface protection:

| Parameter | Max. disconnection time | Min. operate time | Trip value |
|--|---|-------------------|--------------------|
| Over voltage (stage 1) ^a | 3s | - | 230V +10% (253V) |
| Over voltage (stage 2) | 0,2s | 0,1s | 230V +15% (264,5V) |
| Under voltage | 1,5 s | 1,2 s | 230V -15% (195,5V) |
| Over frequency | 0,5 s | 0,3 s | 50Hz +4% (52 Hz) |
| Under frequency | 0,5 s | 0,3 s | 50Hz -5% (47,5 Hz) |
| Reconnection settings for voltage | 0,85Un (195,5V) ≤ U ≤ 1,10Un (253V) | | |
| Reconnection settings for frequency | 49,5 Hz ≤ f ≤ 50,1 Hz | | |
| Reconnection time | ≥ 60 s | | |
| Active power gradient after reconnection | 10% P _{E_{max}} / per minute | | |
| Permanent DC-injection | 0,5% of rated inverter output current or 20mA | | |
| Loss of mains according EN 62116 (LoM) | 2,0 s | | |

Note:

^a Over voltage – stage1: 10 min-mean-value corresponding to EN 50160.

Default interface setting according to EN 50438:2013 are used. Interface protection setting are password protected adjustable.

The above stated generators are tested according to the requirements in the EN 50549-1:2019. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the EN 50549-1:2019.



Certificate of compliance

Applicant: **Huawei Technologies Co., Ltd.**
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129
P.R. China

Product: **SOLAR INVERTER**

Model: **SUN2000-100KTL-M1**
SUN2000-100KTL-INM0

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with IEC 61727:2004 and IEC62116:2014 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverters.

Applied rules and standards:

IEC 61727:2004
Photovoltaic (PV) systems – Characteristics of the utility interface

IEC 62116:2014
Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

Report number: **PV190905N026**
PV190905N026-1

Certification program: **NSOP-0032-DEU-ZE-V01**

Certificate number: **U19-0535**

Date of issue: **2019-09-19**

Certification body



Holger Schaffer



Certification body Bureau Veritas Consumer Products Services Germany GmbH accredited according to DIN EN ISO/IEC 17065
A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH



Certificate of compliance

Applicant: Huawei Technologies Co., Ltd.
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129
P.R.C

Product: SOLAR INVERTER

Model: SUN2000-100KTL-M1
SUN2000-100KTL-INM0

Use in accordance with regulations:

The inverters are tested according to specified environmental influences and efficiency. For detailed information, please watch the corresponding test reports.

Applied rules and standards:

IEC 60068-2-1:2007 Environmental testing – Part 2-1: Tests – Test A: Cold
IEC 60068-2-2:2007 Environmental testing – Part 2-2: Tests – Test B: Dry heat
IEC 60068-2-6:2007 Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)
IEC 60068-2-14:2009 Environmental testing – Part 2-14: Tests – Test N: Change of temperature
IEC 60068-2-27:2008 Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock
IEC 60068-2-30:2005 Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12h + 12 h cycle)
IEC 60068-2-64:2008 Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random, guidance
IEC 60068-2-78:2012 Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state
IEC 61683:1999 Photovoltaic systems – Power conditioners – Procedure for measuring efficiency

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

Report number: PV190905N026-2
YBH (H) 05615181
Certification program: NSOP-0032-DEU-ZE-V01

Certificate number: U19-0546
Date of issue: 2019-09-26

Certification body



Holger Schaffer

Certification body Bureau Veritas Consumer Products Services Germany GmbH accredited according to DIN EN ISO/IEC 17065
A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

HUAWEI TECHNOLOGIES ESPAÑA S.L.

C/Isabel Colbrand, 22

Centro Empresarial Castellana Norte

28050 Madrid



Madrid, 7 Septiembre de 2020

D. Jín Yong, mayor de edad, provisto de NIE Y3599557W en su calidad de representante legal de **Huawei Technologies España S.L.** (en adelante, "Huawei"), con domicilio social en Isabel Colbrand, 22, 28050 Madrid y NIF B-84136464, comercializadora en España de productos marca Huawei.

DECLARA

Que los productos de los modelos especificados cuentan con el certificado de mercado **CE** (**Declaración de Conformidad UE**) correspondiente:

| Modelo/Software | Declaración de Conformidad |
|------------------------|-----------------------------------|
| SUN2000-33KTL-A | CE-03325941-02 |
| SUN2000-36KTL | CE-03325941-02 |
| SUN2000L-2KTL /V1 | CE-03501465 |
| SUN2000L-3.68KTL | CE-03501465 |
| SUN2000L-3KTL | CE-03501465 |
| SUN2000L-4.6KTL | CE-03501465 |
| SUN2000L-4KTL | CE-03501465 |
| SUN2000L-5KTL | CE-03501465 |
| SUN2000-10KTL | CE-03602051; CE-04744035 |
| SUN2000-12KTL | CE-03602051; CE-04744035 |
| SUN2000-15KTL | CE-03602051 |
| SUN2000-17KTL | CE-03602051 |
| SUN2000-20KTL | CE-03602051 |
| SUN2000-23KTL | CE-03602051 |
| SUN2000-8KTL | CE-03602051; CE-04744035 |
| SUN2000-2KTL-L0/V100 | CE-04312493 |
| SUN2000-3KTL-L0 | CE-04312493 |
| SUN2000-4KTL-L0 | CE-04312493 |
| SUN2000-5KTL-L0 | CE-04312493 |
| SUN2000-2KTL-L1/V200 | CE-06747210 |
| SUN2000-3KTL-L1 | CE-06747210 |
| SUN2000-3.68KTL-L1 | CE-06747210 |
| SUN2000-4KTL-L1 | CE-06747210 |
| SUN2000-4.6KTL-L1 | CE-06747210 |

| | |
|--|----------------|
| SUN2000-5KTL-L1 | CE-06747210 |
| SUN2000-6KTL-L1 | CE-06747210 |
| SUN2000-60KTL-M0 | CE-04397112-02 |
| SUN2000-50KTL-M0 | CE-04397112-02 |
| SUN2000-10KTL-M0 | CE-04744035 |
| SUN2000-12KTL-M0 | CE-04744035 |
| SUN2000-15KTL-M0 | CE-04744035 |
| SUN2000-17KTL-M0 | CE-04744035 |
| SUN2000-20KTL-M0/V100 | CE-04744035 |
| SUN2000-12KTL-M2 | CE-04744035 |
| SUN2000-15KTL-M2 | CE-04744035 |
| SUN2000-17KTL-M2 | CE-04744035 |
| SUN2000-20KTL-M2 | CE-04744035 |
| SUN2000-3KTL-M0 | CE-04744035 |
| SUN2000-4KTL-M0/V100 | CE-04744035 |
| SUN2000-5KTL-M0 | CE-04744035 |
| SUN2000-6KTL-M0 | CE-04744035 |
| SUN2000-8KTL-M0 | CE-04744035 |
| SUN2000-100KTL-INM0 | CE-05657442 |
| SUN2000-105KTL-H1 | CE-04286312 |
| SUN2000-100KTL-M1 | CE-05657442 |
| SUN2000-168KTL-H1 | CE-05806860 |
| SUN2000-175KTL-H0 | CE-05806860 |
| SUN2000-185KTL-H1 | CE-05806860 |
| SUN2000-185KTL-INH0 | CE-05806860 |
| Smartlogger3000A03EU,Smartlogger3000A01EU | CE-05837808-1 |
| Smartlogger3000B02EU | CE-05837808-2 |
| Smart PV Optimizer/HUAWEI SUN2000 - 450W-P, SUN2000 - 375W-P | CE-06515273 |
| Smart Dongle-WLAN-FE | CE-05626211 |
| Smart Dongle-4G | CE-04562612 |

Y para que así conste, a efecto de la declaración mencionada, firma:

α 

Jin Yong
 Director General
 Huawei Technologies España S.L.

| | | |
|--|--|---|
| Nº de certificado de producto | 20465-CER-E2 | |
| Solicitante | Huawei C/ Isabel Colbrand 22, 28050. Las Tablas – Madrid - España | |
| Series | SUN 2000 (inversor) | |
| Modelos | Inversor: Huawei SUN2000-100KTL-M1 Huawei SUN2000-30KTL-M3 Huawei SUN2000-36KTL-M3 Huawei SUN2000-40KTL-M3 Huawei SUN2000-60KTL-M0 | Analizador de red: Huawei DTSU666-H Smartlogger: Huawei SmartLogger3000A Huawei Smartlogger3000B Huawei SmartACU2000D Transformador de corriente: Huawei CTF24-5K-250 |
| Tipo de unidad generadora | Inversor trifásico / Analizador de red / Transformador de corriente | |
| Datos técnicos | Ver páginas 2, 3, 4, 5 y 6. | |
| Versión de Software | Inversor: V500R001 Analizador de red: V1.01 Smartlogger: V300R001 | |
| Norma | Real Decreto 244/2019 , de 5 de abril, por el que se regulan las condiciones administrativas, técnicas y económicas del autoconsumo de energía eléctrica. Acogido a régimen de autoconsumo. Conforme a Anexo I. | |
| <p>Después de haber evaluado el informe de ensayo número: 20465-TR-E2, realizado por CERE (Laboratorio acreditado con N° 5314.01) y basado en los requisitos de EN ISO/IEC 17025: 2017.</p> <p>La solución antes mencionada cumple con los requisitos de:</p> <p>Real Decreto 244/2019, de 5 de abril, por el que se regulan las condiciones administrativas, técnicas y económicas del autoconsumo de energía eléctrica. Acogido a régimen de autoconsumo. Conforme a Anexo I.</p> <p>Esta certificación se basa en el proceso interno de PET-CERE-09 Rev 27 basado en los requisitos de la norma EN ISO/IEC 17065:2012. Para este proceso de certificación, las actividades que fueron evaluadas en conformidad con:</p> <ul style="list-style-type: none"> • Ensayos sobre muestra seleccionada por CERE. • Sistema de calidad conforme ISO 9001 en base a certificado con número: 17 100 1933213 emitido por un cuerpo de certificación acreditado conforme a EN ISO/IEC 17021. • Inspección del proceso de fabricación. <p>Este certificado cancela y sustituye al certificado 20465-CER-E1 emitido a fecha de 26 de junio de 2020.</p> | | |
| <p>Madrid, a 7 julio de 2020. Este certificado es válido hasta el 12 junio de 2023.</p> <p style="text-align: right;">Miguel Martínez Lavín Certification Manager</p> | | |

Datos técnicos

Inversor

| SUN2000-100KTL-M1 | |
|--|--|
| Entrada | |
| Potencia máxima | 112.200 W |
| Tensión máxima | 1100 V |
| Rango de operación de tensión (MPPT) | 200-1000V |
| Mínima tensión de arranque | 200 V |
| Rango de tensión MPPT a plena carga | 540-800 V (380 V-400 V), 625-850 V (480 V) |
| Tensión nominal | 600 V (380 V-400 V), 720 V (480 V) |
| Máxima corriente (per MPPT) | 26 A |
| Máxima corriente de cortocircuito (per MPPT) | 40 A |
| Salida | |
| Potencia activa nominal | 100 kW |
| Potencia máxima | 110 kVA |
| Máxima potencia activa (cosφ = 1) | 110 kW |
| Tensión nominal (fase/ línea) | 220 V/380 V, 230 V/400 V, 277 V/480 V, 3W + (N)b + PE, |
| Corriente nominal | 152.0A (380V), 144.4A (400V), 120.3A (480V) |
| Frecuencia de red | 50 Hz |
| Máxima corriente | 168.8A (380V), 160.4A (400V), 133.7A (480V) |
| Comunicaciones | |
| Comunicaciones | RS485 |

Analizador de red

| Modelo | Huawei DTSU666-H |
|---|----------------------------|
| Tipo de conexión | 3x230/400V or 3x400V |
| Grado de precisión | Clase Activa 1 |
| Especificaciones de corriente | 250A/50mA |
| Máximo porcentaje de limitación de error de varios instrumentos | ±2,0 |
| Tipo | Via Transformador |
| Tipo de comunicación | Protocolo RS485 ModBus RTU |
| Constante de instrumento | 400imp/kWh |
| Tiempo de refresco | 200 ms |

Smartlogger

| Modelo | SmartLogger3000A | SmartLogger3000B * | SmartACU2000D** |
|--|--|--|--|
| Fuente de DC | 12V / 24 V | 24V, 0.8 A | 12V / 24 V |
| Fuente de AC | 100 V~240 V, 50 Hz | 100 V~240 V, 50 Hz | 380 V ~ 800 V, 3Ph, 50 Hz |
| Comunicaciones | Modbus-TCP / Modbus-RTU | Modbus-TCP / Modbus-RTU | Modbus-TCP / Modbus-RTU |
| Velocidad de la interfaz de comunicación | COM x 3, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps. | COM x 3/6*, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps | COM x 3/6*, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps |

* Sin & con SmartModule1000A

** Integrado SmartLogger3000B con 1 módulo

** Modelos -D-00 /-D-001/ -D-02/ -D-03

Características del transformador de corriente:

| Modelo | Huawei SCT-24 250A/50 mA 0.5 20Ω |
|------------------------------------|---|
| Corriente nominal primaria | 250 A |
| Relación de transformación nominal | 5000: 1 |
| Carga nominal | 20 Ω |
| Precisión | ±0.75%, Clase 1.0 de 1% a 120% de la corriente nominal primaria |
| Ángulo de fase | ±0.5 grados (30 minutos) 0 de 1% a 120% de la corriente nominal |

Las muestras seleccionadas para ensayo son representativas de la producción.
Las muestras fueron seleccionadas en:

Huawei Technologies Co., Ltd.
No.2, City Avenue Songshan Lake
Sci.&Tech. Industry Park, 523808
Dongguan, Guandong, P.R. China

Tomas de muestra:

20465-TM

La inspección del proceso de fabricación se realizó en:
El día 22 de enero de 2020.

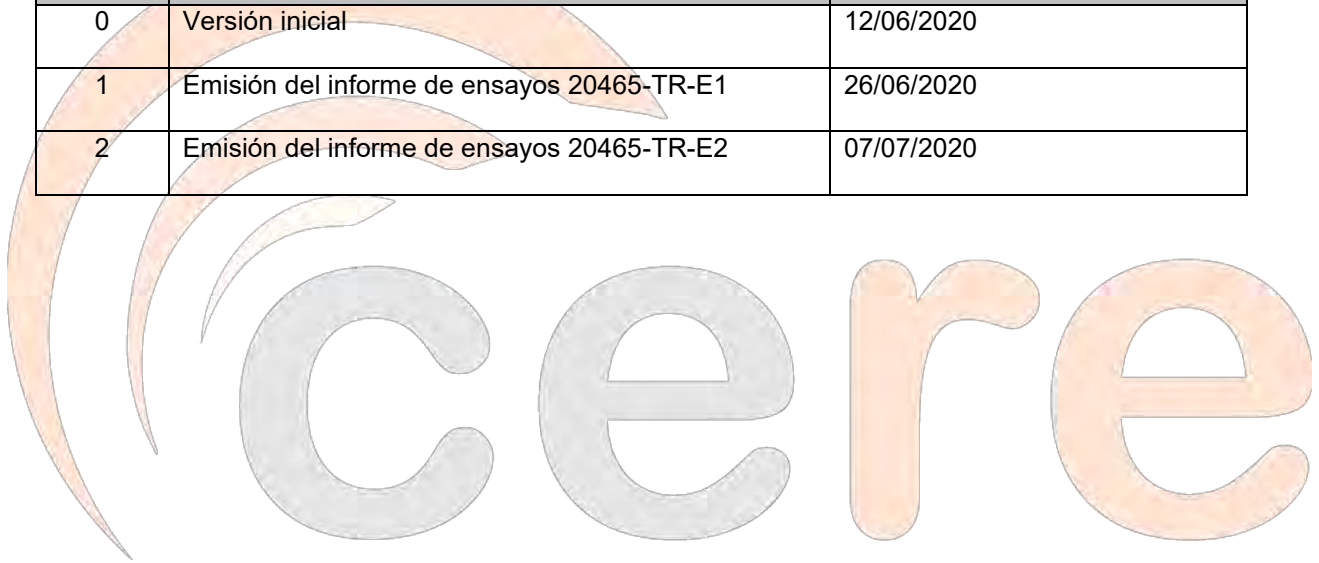
Huawei Technologies Co., Ltd.
No.2, City Avenue Songshan Lake
Sci.&Tech. Industry Park, 523808
Dongguan, Guandong, P.R. China

Número de informe de inspección

20216-20-1-IF

CONTROL DE CAMBIOS

| Revisión | Modificaciones/ Cambios | Fecha |
|----------|--|------------|
| 0 | Versión inicial | 12/06/2020 |
| 1 | Emisión del informe de ensayos 20465-TR-E1 | 26/06/2020 |
| 2 | Emisión del informe de ensayos 20465-TR-E2 | 07/07/2020 |





Certificado de conformidad

Solicitante: Huawei Technologies Co., Ltd.
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129
P.R.C

Producto: Inversor fotovoltaico

Modelo: SUN2000-100KTL-M1

Certificamos que los inversores de conexión a la red citados en este documento cumplen con la normativa española sobre conexión de instalaciones fotovoltaicas a la red de baja tensión.

En concreto, cumplen las exigencias de seguridad de las personas y de la instalación previstas en el Real Decreto 1699/2011 y Real Decreto 661/2007, mediante el empleo de técnicas equivalentes a un transformador de aislamiento galvánico.

Estos inversores incorporan una unidad de monitorización de corriente residual (en inglés RCMU: Residual Current Monitoring Unit), sensible a todas las corrientes de fuga, que actúa con un umbral de respuesta de 30 mA. Los relés de corriente alterna desconectan de forma segura la red en caso de fallo. Disponen además de un dispositivo de control de aislamiento y un detector de tierra en el lado de la corriente continua, antes de la conexión a red. Estas funciones han sido probadas y certificadas según la norma DIN V VDE V 0126-1-1:2006:02.

La corriente continua inyectada en la red de distribución por el inversor es inferior al 0,5% del valor eficaz de la corriente nominal de salida, medida tal como indica la "Nota de interpretación de equivalencia de la separación galvánica".

El tiempo de reconexión de los inversores es de al menos 3 minutos conforme a la norma IEC 61727:2001, una vez que los parámetros de la red vuelven a estar dentro de los márgenes permitidos. No existe la posibilidad de que los usuarios puedan modificar los valores de ajuste de las protecciones mediante software. Los equipos disponen de protección frente al funcionamiento en isla.

Bases de certificación:

RD413:2014, RD 1699:2011, RD661:2007, RD1663:2000, DIN V VDE V 0126-1-1:2006-02 (seguridad funcional, monitorización de corriente residual), nota de interpretación técnica de la equivalencia de la separación galvánica de la conexión de instalaciones generadoras en baja tensión.

El concepto de seguridad de un producto representativo de los mencionados arriba, corresponde, en el momento de la emisión de este certificado, a las especificaciones válidas de seguridad para el empleo especificado conforme a la normativa vigente.

Número de informe: PVSP190905N026 **Programa de certificación:** NSOP-0032-DEU-ZE-V01
Número de certificado: U20-0008 **Fecha:** 2020-01-10

Organismo de certificación



Holger Schaffer

Organismo de certificación de Bureau Veritas Consumer Products Services Germany GmbH Acreditado con arreglo a la normativa europea DIN EN ISO/IEC 17065

Una representación parcial del certificado requiere la aprobación por escrito de Bureau Veritas Consumer Products Services Germany GmbH



HUAWEI TECHNOLOGIES ESPAÑA S.L.
 C/Isabel Colbrand, 22
 Centro Empresarial Castellana Norte
 28050 Madrid



Madrid, 11 de agosto de 2020

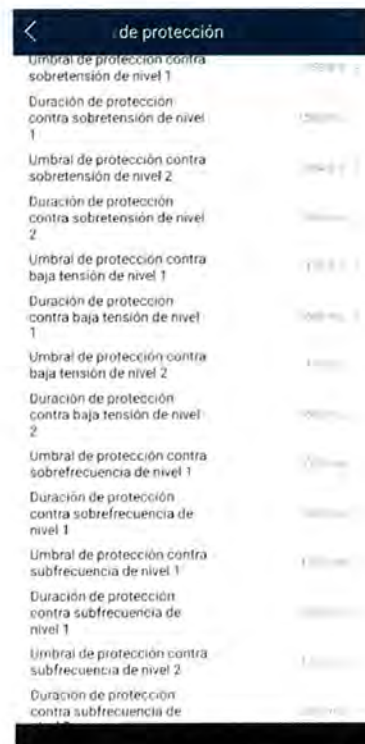
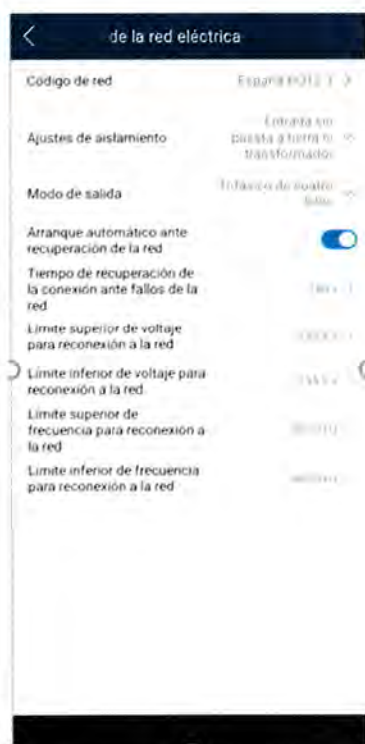
D. Jin Yong, mayor de edad, provisto de NIE Y3599557W en su calidad de representante legal de Huawei Technologies España S.L. (en adelante, "Huawei"), con domicilio social en Isabel Colbrand, 22, 28050 Madrid y NIF B-84136464, comercializadora en España de productos marca Huawei.

DECLARA

Que los inversores Huawei SUN2000MA cumplen las normas Españolas con las siguientes características:

- Disponen de interruptor de interconexión interno para la desconexión automática.
- Disponen de protección interna de mínima y máxima tensión y frecuencia de red. Con la configuración mostrada en la figura 1 se obtienen los valores umbral y tiempos de actuación máximos que se indican a continuación:

| Parámetro | Umbral de protección | Tiempo máximo de actuación |
|---------------------------------------|----------------------|----------------------------|
| Sobretensión-fase 1 | 1.1*Un | 1.5s |
| Sobretensión-fase 2 | 1.15*Un | 0.2s |
| Subtensión | 0.85*Un | 1.5s |
| Frecuencia máxima | 50.5Hz | 0.5s |
| Frecuencia mínima | 47.5Hz | 3s |
| Siguiendo la indicaciones en figura1: | | |



- Disponen de un vigilante de aislamiento a tierra en el lado de continua.
- Disponen de protección contra funcionamiento en isla, cumpliendo con lo indicado en la Norma UNE EN50438, IEC 62116, UNE206006:2011 IN.
- Presentan un coeficiente de distorsión armónica menor del 3%.
- Los dispositivos para la monitorización de frecuencia y tensión presentan un error en la medida inferior al 5%.
- El inversor cumple con todas las normas y directrices de seguridad aplicables:
UNE206007-1 IN:2013

RD413/2014, RD 1699/2011, Y RD 661/2007

DIN EN 61000-6-2, DIN EN 61000-6-4

Y para que así conste, a efecto de la declaración mencionada, firma:

A handwritten signature in black ink, consisting of several loops and a long vertical stroke at the end.

Jin Yong

Director General

Huawei Technologies España S.L.



To Whom It May Concern,

Huawei hereby confirms that provides innovative FusionSolar Smart PV Solution which has been successfully widely deployed in Europe, Latin America, Africa, Asia-Pacific, and etc., totalling more than 160GW of String Inverters for Photovoltaic projects globally, including utility scale projects,

and also confirm that have manufacturing experience more than five (5) years, with an annual production capacity in the last three (3) years not less than 1000 MW annually.

The manufacturer:

| | |
|---------------------|---|
| Name of the company | Huawei Technologies Co., Ltd. |
| Address | Huawei Headquarter, Bantian, Longgang District, Shenzhen, 518129, P.R China |
| Registration number | 914403001922038216 |
| Business brief | <p>Huawei is a leading global provider of information and communications technology (ICT) infrastructure, smart devices and energy solutions.</p> <p>Through our dedication to customer-centric innovation and strong partnerships, we are committed to creating maximum value for customers. Our products and solutions have been deployed in over 170 countries, serving more than one third of the world's population.</p> <p>Huawei provides innovative FusionSolar Smart PV Solution which has been widely deployed in Europe, Latin America, Africa, Asia-Pacific, and etc., totalling more than 160GW. Huawei expects to provide long-term assurance for customers with leading smart PV plant solutions and excellent services, maximizing yields for customer in the total PV plant lifecycle.</p> |

Sincerely yours,

Bruno Santo

Huawei Digital Power Portugal

Certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Certificate Holder:

Huawei Technologies Co., Ltd.

Huawei Headquarters, Bantian, Longgang District,
Shenzhen, 518129 Guangdong, P. R. China

including the locations according to annex

Scope:

Design, Manufacturing, Procurement, Supply Chain Management, Sales, and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System)

Note1: ODN and Distribution Product: ODF (Optical Distribution Frame), FDT (Fiber Distribution Terminal), SPL (Splitter), FAT (Fiber Access Terminal), SSC (Splitting and Splicing Closure), Indoor Cable, iODF (Intelligent Optical Distribution Frame), iFDT (Intelligent Fiber Distribution Terminal), iFAT (Intelligent Fiber Access Terminal), Intelligent Patch Cord, iSPL (Intelligent Electric ID).

Note2: The Design and Service of Cloud Computing Products include Provision of Planning and Design Service, Reserch and Development Services, Operation and Maintenance Service, Service Operation and Customer Support Service for Huawei Cloud Service, including Computing, Storage, Network, Database, Security, Domain & Website, Application, Management & Deployment, DevCloud, Migration, Cloud Communications, IoT, Dedicated Cloud, Enterprise Network, Enterprise Intelligence. The Service of Data Center Products include the Provision of Operation and Maintenance Services for Huawei Cloud Data Centers.

Note3: Supply Chain Management include Storage, Logistic and Delivery Management.

Proof has been furnished by means of an audit that the requirements of ISO 14001:2015 are met.

Validity:

The certificate is valid from 2021-05-06 until 2024-05-18.
It remains valid subject to satisfactory surveillance audits.

This certificate information can be searched on CNCA official website <http://www.cnca.gov.cn>

2021-05-10

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

| No. | Location | Scope |
|-----|--|--|
| /01 | Huawei Technologies Co., Ltd. | Huawei Technologies Co., Ltd.: Design, Procurement, Supply Chain Management, Sales, and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System); |
| /02 | Huawei Device (Shenzhen) Co., Ltd. | |
| /04 | Huawei Software Technologies Co., Ltd. | |
| /05 | Huawei Cloud Computing Technologies Co., Ltd. | |
| /06 | HiSilicon (Shanghai) Technologies Co., Limited. | |
| /45 | Huawei Device Co., Ltd. | |
| /46 | Ulanqab Huawei Cloud Computing Technologies Co., Ltd. | |
| | Huawei Headquarters, Bantian, Longgang District, Shenzhen, 518129 Guangdong, P. R. China | Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.: Design, Procurement, Supply Chain Management, Sales and Services (including Repair and Customer Support Service) of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories; Huawei Software Technologies Co., Ltd.: Design, Procurement, Supply Chain Management, Sales and Services (including Installation Management, Network Engineering Services, Network Field Maintenance and Customer Support Services) of Data Service Products, Intelligent Vision Products, Cloud Computing and Data Center Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components); |

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Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Huawei Cloud Computing Technologies Co., Ltd. & Ulanqab Huawei Cloud Computing Technologies Co., Ltd.:

Design, Sales and Services (including Installation Management, Network Engineering Services, Network Field Maintenance and Customer Support Services) of Cloud Computing and Data Center Products;

HiSilicon (Shanghai) Technologies Co., Limited.:

Design, Supply Chain Management, Sales, and Service of Semiconductor Chips and Solutions for Network Access Devices, and Sales and Service of Short-Distance Wireless Communications Chips and Solutions

- /07 Huawei Technologies Co., Ltd.
- /08 Huawei Device (Shenzhen) Co., Ltd.
- /47 Huawei Device Co., Ltd.

Building 2 and Block A&B of Building 1, Phase1 Tian An Cloud Park, No. 2018 Xuegang Road, Bantian, Longgang District, Shenzhen, 518129 Guangdong, P. R. China

Huawei Technologies Co., Ltd.:

Design, Procurement, Supply Chain Management, Sales, and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:

Design, Procurement, Supply Chain Management, Sales and Services (including Repair and Customer Support Service) of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories

- /10 Huawei Technologies Co., Ltd.
- /11 Huawei Machine Co., Ltd.
- /12 Huawei Device Co., Ltd.
- /14 Huawei Software Technologies Co., Ltd.
- /15 HiSilicon (Shanghai) Technologies Co., Limited.
- /48 Huawei Device (Shenzhen) Co., Ltd.

No. 6 of C/D Zone, No. 2
Xincheng Avenue, National
High-technical Property
Development Songshan Lake,
Dongguan, 523808
Guangdong, P. R. China

Huawei Technologies Co., Ltd. & Huawei Machine Co., Ltd.:

Design, Manufacturing, Procurement, Supply Chain Management, Sales, and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:

Design, Manufacturing, Procurement, Supply Chain Management, Sales and Services (including Repair and Customer Support Service) of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories;

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Huawei Software Technologies Co., Ltd.:

Design, Manufacturing, Procurement, Supply Chain Management, Sales and Services (including Installation Management, Network Engineering Services, Network Field Maintenance and Customer Support Services) of Data Service Products, Intelligent Vision Products, Cloud Computing and Data Center Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components);

HiSilicon (Shanghai) Technologies Co., Limited.:

Supply Chain Management of Network Access Terminal Semiconductor Chips and Solutions

/16 Huawei Technologies Co., Ltd.

/17 Huawei Device Co., Ltd.

/19 Huawei Software Technologies Co., Ltd.

/20 Huawei Cloud Computing Technologies Co., Ltd.

/49 Huawei Device (Shenzhen) Co., Ltd.

/50 Ulanqab Huawei Cloud Computing Technologies Co., Ltd.

Huawei Xiliubeipo Village,
No. 9, Huanhu Road, Hi-Tech
Industrial Development Zone,
Songshan Lake, Dongguan,
523808 Guangdong,
P. R. China

Huawei Technologies Co., Ltd.:

Design, Procurement, Supply Chain Management, Sales, and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

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Certificate Registr. No. **01 104 1933213**

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:

Design, Procurement, Supply Chain Management, Sales and Services (including Repair and Customer Support Service) of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories;

Huawei Software Technologies Co., Ltd.:

Design, Procurement, Supply Chain Management, Sales and Services (including Installation Management, Network Engineering Services, Network Field Maintenance and Customer Support Services) of Data Service Products, Intelligent Vision Products, Cloud Computing and Data Center Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components);

Huawei Cloud Computing Technologies Co., Ltd. & Ulanqab Huawei Cloud Computing Technologies Co., Ltd.:

Design, Sales and Services (including Installation Management, Network Engineering Services, Network Field Maintenance and Customer Support Services) of Cloud Computing and Data Center Products

- /21 Huawei Technologies Co., Ltd.
- /22 Huawei Machine Co., Ltd.
- /23 Huawei Device Co., Ltd.
- /51 Huawei Device (Shenzhen) Co., Ltd.

No. 1, Gaoxiong Road, No. 2,
Gaoxiong Road, Hi-Tech
Industrial Development Zone,
Songshan Lake, Dongguan,
523808 Guangdong,
P. R. China

Huawei Technologies Co., Ltd. & Huawei Machine Co., Ltd.:

Design, Manufacturing, Supply Chain Management of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly,

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:

Design, Manufacturing, Supply Chain Management of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories

/25 Huawei Technologies Co., Ltd.
/26 Huawei Machine Co., Ltd.

Dongli-Glp Logistics Park,
Shipai Town, Dongguan,
523330 Guangdong,
P. R. China

Huawei Technologies Co., Ltd. & Huawei Machine Co., Ltd.:

Supply Chain Management of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure(including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System)

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

- /27 Huawei Technologies Co., Ltd.
- /28 Huawei Machine Co., Ltd.
- /29 Huawei Device Co., Ltd.
- /52 Huawei Device (Shenzhen) Co., Ltd.

Giada Logistics Park, South
China Industrial City, Liaobu
Town, Dongguan, 523400
Guangdong, P. R. China

Huawei Technologies Co., Ltd. & Huawei Machine Co., Ltd.:
Supply Chain Management of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:
Supply Chain Management of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories

- /31 Huawei Technologies Co., Ltd.
Beijing R&D Center
- /32 Beijing Huawei Digital
Technologies Co., Ltd.
- /53 Huawei Device Co., Ltd.
- /54 Huawei Device (Shenzhen) Co.,
Ltd.

Huawei Technologies Co., Ltd. Beijing R&D Center & Beijing Huawei Digital Technologies Co., Ltd.:
Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

No. 6 Wensong Road,
No. 18,19&25, Muhe Road,
Haidian District, 100095
Beijing, P. R. China

Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:
Design of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories

/33 Huawei Technologies Co., Ltd.
Beijing R&D Center
/34 Beijing Huawei Digital
Technologies Co., Ltd.

Huawei Building, No. 3 Xinx
Road, Shangdi, Haidian
District, 100095 Beijing,
P. R. China

**Huawei Technologies Co., Ltd. Beijing R&D Center &
Beijing Huawei Digital Technologies Co., Ltd.:**

Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including

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Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System)

/35 Huawei Technologies Co., Ltd.
Chengdu R&D Center

No. 1899 Xiyuan Avenue,
Hi-Tech Western District,
Chengdu, 610041 Sichuan,
P. R. China

Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System)

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

- /36 Huawei Technologies Co., Ltd.
Nanjing R&D Center
/37 Huawei Software Technologies Co., Ltd.

No. 101 Software Avenue,
Yuhuatai District, Nanjing,
210012 Jiangsu, P. R. China

Huawei Technologies Co., Ltd. Nanjing R&D Center:

Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);

Huawei Software Technologies Co., Ltd.:

Design of Data Service Products, Intelligent Vision Products, Cloud Computing and Data Center Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components)

- /38 Shanghai Huawei Technologies Co., Ltd.
/55 Huawei Device Co., Ltd.
/56 Huawei Device (Shenzhen) Co., Ltd.

Shanghai Huawei Technologies Co., Ltd.:

Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

No. 2222 Xinqiao Road,
Shanghai Free Trade Pilot
Zone 201206, P. R. China

Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);
Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:
Design of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories

/39 HiSilicon (Shanghai)
Technologies Co., Limited.

Design of Network Access Terminal Semiconductor Chip and Solution

Unit 601&701, Building 19th,
Jinqiao Wanchuang Centre,
No.200 Jinsu Road, Pudong
New Area, 201206 Shanghai,
P. R. China

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

| | | |
|-----|---|--|
| /40 | Xi'an Huawei Technologies Co., Ltd. | Xi'an Huawei Technologies Co., Ltd.: Design and Services (including Installation Management, Network Engineering Services, Network Field Maintenance, Repair, Customer Support and Training Services) of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System); |
| /57 | Huawei Device (Shenzhen) Co., Ltd. | Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.: Design of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories; |
| /58 | Huawei Software Technologies Co., Ltd. | Huawei Software Technologies Co., Ltd.: Design of Data Service Products, Intelligent Vision Products, Cloud Computing and Data Center Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components); |
| /59 | Huawei Cloud Computing Technologies Co., Ltd. | Huawei Cloud Computing Technologies Co., Ltd. & Ulanqab Huawei Cloud Computing Technologies Co., Ltd.: Design of Cloud Computing and Data Center Products |
| /60 | Huawei Device Co., Ltd. | |
| /61 | Ulanqab Huawei Cloud Computing Technologies Co., Ltd. | |

No. 127 Jinye Road, Hi-Tech Industrial Development Zone, Xi'an, 710075 Shanxi, P. R. China

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

- /41 Shanghai Huawei Technologies Co., Ltd.
/42 Huawei Device Co., Ltd.
/43 Huawei Device (Shenzhen) Co., Ltd.
- Building E1&D, Oriental International Trade Center, No. 1599 Xinqiao Road, Shanghai Free Trade Pilot Zone 201206, P. R. China
- Shanghai Huawei Technologies Co., Ltd.:**
Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System);
Huawei Device Co., Ltd. & Huawei Device (Shenzhen) Co., Ltd.:
Design of Digital Entertainment Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories
- /44 Shanghai Huawei Technologies Co., Ltd.
- No. 1100 Jinsui Road, Pudong, 201206 Shanghai, P. R. China
- Design of Semiconductors and Components (including Network and Device Chips, Consumer Chips, and Optical Components), Fixed Access Products, Radio Access Products, Core Network Products, Transport Network Products (Wavelength Division Multiplexing (WDM) Equipment), Data Communication Products, Synchronization Network Products, Antenna System and Radio Frequency Products, Copper and Optical Distribution Network Products (ODN and Distribution Product), Business Support System Products, Network Management System and Tool Products, Data Service Products, Enterprise Service Products, Intelligent Vision Products, Intelligent Collaboration Products, Infrastructure Network and Security Products, Cloud Computing and Data Center Products, Data

Annex to certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 1933213**

Storage Products, Computing Products (including General-Purpose Servers & Computing Components, and AI Servers & Computing Components), Hybrid Video Products, Telecommunication Terminal Products (including Mobile Phone), Computer and Accessories, Digital Energy Products (including Site Power Facility, Intelligent Lithium, BMP & CP, Hybrid Power, UPS, Inverter, Data Center Infrastructure (including Modular Data Center, Precision Air Conditioners in the Equipment Room), Network Management System and Monitoring System, Power Component), Automotive Components and Smart Systems (including Smart Driving Solution, Mobile Data Center, Intelligent Sensor, Lidar, Radar, Camera, Smart Logistics Vehicles, Maps, Navigation, Automatic Driving Data Service, Smart Logistic and Travel Service, Robotic, Smart Cockpit, Vehicle Cloud Service, Vehicle Control, Thermal Management System, Vehicle Gateway, Communication System and Assembly, Multimedia Information System, Under-Vehicle Charging and Energy Storage System, on-Board Charger and Auxiliary Power Supply, Vehicle Power Conversion, Vehicle Wireless Charging, Motor Control System, Battery Management System, Powertrain, Power Domain Controller, and Power Domain Integration System)

2021-05-10



TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

Certificats de qualitat S-Flex



Certificate No: MCS BBA 0195

Technology: MCS 012 – Pitched Roof Installation Kits

Products: S:FLEX Mounting Systems for Pitched Roofs

| Photovoltaic Mounting System for pitched roof structures for plain tiles with steel roof hooks | |
|--|--|
| Components | Roof hook Biber complete Systemrail ST-AK 5/40 l=3150 Mid clamp AK 36-51 End clamp AK II Klick 30-50 Woodscrew 8x80 disc head T40 A2 |
| Installation Type | Above Roof |
| Permissible roof pitch (Angle °) | 30° - 75° |
| Roofing substrate minimum requirements | Plain tiled (double lapped product) |
| Maximum design wind uplift resistance (kPa) Calculated by dividing the characteristic wind uplift resistance by the partial safety factor shown below. | 2.9 |
| Partial (safety) factor(s) | 1.0 |

| Photovoltaic Mounting System for pitched roof structures for tiled roofs with aluminium roof hooks | |
|--|---|
| Components | Roof hook aluminium 100-7-45 complete Systemrail ST-AK 5/40 l=3150 Mid clamp AK 36-51 End clamp AK II Klick 30-50 Woodscrew 6x80 pan head AW30 A2 |
| Installation Type | Above Roof |
| Permissible roof pitch (Angle °) | 22° - 75° |
| Roofing substrate minimum requirements | Profiled or flat single lapped tiles |
| Maximum design wind uplift resistance (kPa) Calculated by dividing the characteristic wind uplift resistance by the partial safety factor shown below. | 5.2 |
| Partial (safety) factor(s) | 1.0 |

| Photovoltaic Mounting System for fibre-cement, trapezoidal sheet and sandwich roofs with hangerbolts | |
|--|---|
| Components | Hanger bolt M10x200 pure Bracket 60mm, M10 complete Systemrail ST-AK 5/40 I=3150 Mid clamp AK 36-51 End clamp AK II Klick 30-50 |
| Installation Type | Above Roof |
| Permissible roof pitch (Angle °) | 10° - 75° |
| Roofing substrate minimum requirements | Profiled metal sheets |
| Maximum design wind uplift resistance (kPa) Calculated by dividing the characteristic wind uplift resistance by the partial safety factor shown below. | 5.2 |
| Partial (safety) factor(s) | 1.0 |

| Photovoltaic Mounting System for trapezoidal sheet roofs with sheet metal rails | |
|--|---|
| Components | Systemrail ST-AK 1/12 I= 180 complete Self-drilling screw 4, 5x26 End clamp AK II Klick 30-50 Mid clamp AK 36-51 |
| Installation Type | Above Roof |
| Permissible roof pitch (Angle °) | 10° - 75° |
| Roofing substrate minimum requirements | Trapezoidal metal sheet system roofs |
| Maximum design wind uplift resistance (kPa) Calculated by dividing the characteristic wind uplift resistance by the partial safety factor shown below. | 1.5 |
| Partial (safety) factor(s) | 1.25 |


S:FLEX GmbH
Reinbecker Weg 9
21029 Hamburg
Germany

The BBA (British Board of Agrément) has issued this Microgeneration Certification Scheme (MCS) Certificate to the company and products named above, in recognition of the products' compliance with the MCS Scheme Requirements for the technology named above.

On behalf of the British Board of Agrément

Date of issue: 2 March 2018

Certificate amended on 10 June 2021 due to format change.



Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited product certification body – Number 0113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk. Readers MUST check the validity and latest issue number of this MCS Certificate by either referring to the BBA website or contacting the BBA directly.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

CERTIFICATE

Management system as per
DIN EN ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

S:Flex GmbH
Reinbeker Weg 9
21029 Hamburg
Germany



with the location **S:Flex GmbH in Elsässer Str. 12, 79189 Bad Krozingen, Germany**

applies a management system in line with the above standard for the following scope

Planning, project planning, service and sales of mounting systems for photovoltaic plants

Certificate Registration No. 44 100 161790
Audit Report No. 3525 8328

Valid from 2020-03-30
Valid until 2023-03-29
Initial certification 2017


Certification Body
at TÜV NORD CERT GmbH

Essen, 2020-03-04

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

Validity can be verified at <https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank>.

TÜV NORD CERT GmbH

Langemarckstraße 20

45141 Essen

www.tuev-nord-cert.com



Deutsche
Akkreditierungsstelle
D-ZM-12007-01-00