C E R T I F I C A T E

of Conformity

EC Council Directive 2014/30/EU

Electromagnetic Compatibility

TÜVRheinland®

Registration No.: AE 50477053 0001

Report No.: 50254512 001

Holder:

Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Product:

PV-Inverter
(PV Grid-connected Inverter)

Identification:

Type Designation: R5-3K-T2 R5-4K-T2 R5-5K-T2
R5-6K-T2 R5-8K-T2 R5-9K-T2
R5-10K-T2 R5-12K-T2
Serial No. : n.a.
Remark: Refer to above-listed test report for details.

Tested acc. to:

EN 61000-6-1:2007
EN 61000-6-2:2005
EN 61000-6-3:2007+A1
EN 61000-6-4:2007+A1

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex I of Council Directive 2014/30/EU. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to the a.m. Directive.

TÜV Rheinland LGA Products GmbH Zertifizierungsstelle TÜVRheinland

Certification Body

Tongle Lee

Date 06.08.2020

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may only be used if all relevant and effective EC Directives are complied with. CE

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co., Ltd.

Date : 06.08.2020
Our ref. : AOFEL 02
Your ref.:

No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Ref : AE Certificate of Conformity EMC

Type of Equipment : PV Grid-connected Inverter
Model Designation : See Certificate
Certificate No. : AE 50477053 0001
Report No. : 50254512 001

Dear Ladies and Gentlemen,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

Tongle Lee

Enclosure

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司

No. 01/03B-08, Floor 7 and No. 01/04B-08, Floor 11, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing, P.R. China

北京市朝阳区东三环中路乙10号艾维克大厦第7层第01、03B-08号，第11层第01、04B-08号
邮编：100022

Tel: (8610)8524 2222
Fax: (8610)8524 2200
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

C E R T I F I C A T E

TÜVRheinland®

of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50450771 0001

Report No.: 50270885 001

Holder:
Guangzhou Sanjing Electric
Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P. R. China

Product:
PV-Inverter
(Grid-tied PV Inverter)

Identification:

Type Designation: R5-3K-T2 R5-4K-T2 R5-5K-T2 R5-6K-T2
R5-8K-T2 R5-9K-T2 R5-10K-T2 R5-12K-T2
R5-3K-T2-AUS R5-4K-T2-AUS R5-5K-T2-AUS
R5-6K-T2-AUS R5-8K-T2-AUS R5-9K-T2-AUS
R5-10K-T2-AUS
Serial Number : R5T2123G1847C00542
Remark : Refer to report 50270885 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

TÜVRheinland

Certification Body

Date 29.10.2019

A. Chen

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co., Ltd.
Mr. Li Yun
-
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P. R. China

Date : 30.10.2019
Our ref. : zhangco 02
Your ref.: L.Y

Ref : AN Certificate of Conf. Low Voltage D.

Type of Equipment : Grid-tied PV Inverter
Model Designation : See Certificate
Certificate No. : AN 50450771 0001
Report No. : 50270885 001

Dear Mr. Li Yun,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

A. Chen

Enclosure

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司
Unit 707, AVIC Bldg., No. 10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing, 100022, P.R.China
北京市朝阳区东三环中路乙10号 艾维克大厦707室 邮编：100022
Tel: (8610)6566 6660
Fax: (8610)6566 6667
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

CERTIFICATE
of Conformity

TÜVRheinland®

Registration No.: AK 50501365 0001

Report No.: CN21TQ5M 001

Holder:
Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Product:
PV-Inverter
Grid-connected PV Inverter

Identification:
Type Designation: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2,
R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2,
Serial No. : R5T2123G1801C00001, R5T2033G2001C00001,
Firmware version: V3.017
Remark: Refer to test report CN21TQ5M 001 for details.

Tested acc. to:
UNE 206006 IN:2011
UNE 206007-1 IN:2013
RD 1699:2011
RD 661:2007
RD 413:2014

The certificate of conformity refers to the above mentioned product. This is to certify that the specimen is in conformity with the assessment requirement mentioned above. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle
Certification Body

Date 19.04.2021

A. Chen

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CERTIFICADO

de conformidad

TÜVRheinland®

Adjunto a
Attachment to

Número de registro:
Registration No.
AK 50501365 0001

Reporte no:
Report No.
CN21TQ5M 001

Titular de la licencia:
License Holder
Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong P. R. China

Tipo de produccion:
Type of production
Conectado a la red PV Inversor

Modelo:
Model
R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2

Versión de firmware:
Firmware version
V3.017

Normas:
Standards

UNE 206006:2011 IN
Ensayos de detección de funcionamiento en isla de múltiples inversores fotovoltaicos conectados a red en paralelo

UNE 206007-1:2013 IN
Requisitos de conexión a la red eléctrica Parte 1: Inversores para conexión a la red de distribución

RD1699/2011
Real Decreto 1699/2011, de 18 de noviembre, por el que se regula la conexión a red de instalaciones de producción de energía eléctrica de pequeña potencia.

RD 661/2007
Real Decreto 661/2007, de 25 de mayo, por el que se regula la actividad de producción de energía eléctrica en régimen especial.

RD 413/2014
Real Decreto 413/2014, de 6 de junio, por el que se regula la actividad de producción de energía eléctrica a partir de fuentes de energía renovables, cogeneración y residuos.

Fecha de emisión:
Date of issue
19.04.2021

Válido hasta el:
Valid until the
18.04.2024

El certificado de conformidad se refiere al producto mencionado anteriormente. Esto es para certificar que el espécimen está en conformidad con el requisito de evaluación mencionado anteriormente. Este certificado no implica una evaluación de la producción del producto y no permite el uso de una marca de conformidad TÜV Rheinland.

The certificate of conformity refers to the above mentioned product. This is to certify that the specimen is in conformity with the assessment requirement mentioned above. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

TÜV Rheinland LGA Products GmbH Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co.,
Ltd.

Date : 19/04/2021
Our ref. : 02
Your ref.: 168312649

No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Ref : AK Certificate of Conformity

Type of Equipment : Grid-connected PV Inverter
Model Designation : See Certificate
Certificate No. : AK 50501365 0001
Report No. : CN21TQ5M 001

Dear Ladies and Gentlemen,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

A. Chen

Enclosure

CERTIFICATE

TÜVRheinland®

of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50522592 0001

Report No.: CN21ACEC 001

Holder:
Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Product:
PV-Inverter
(Grid-connected PV Inverter)

Identification:
Type Designation: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2,R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15, R5-3K-T2-AUS, 5-4K-T2-AUS, R5-5K-T2-AUS, R5-6K-T2-AUS, R5-8K-T2-AUS, R5-9K-T2-AUS, R5-10K-T2-AUS
Serial Number : A003148931-004, A003148931-003
Remark : Refer to test report CN21ACEC 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

TÜV Rheinland LGA Products GmbH Prüfstelle TÜVRheinland®

Certification Body

Date 27.10.2021

A. Chen

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE **The CE marking may be used if all relevant and effective EC Directives are complied with.** CE

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co.,
Ltd.

Date : 27.10.2021
Our ref. : PJG 02
Your ref.: 168330287

No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Ref : AN Certificate of Conf. Low Voltage D.

Type of Equipment : Grid-connected PV Inverter
Model Designation : See Certificate
Certificate No. : AN 50522592 0001
Report No. : CN21ACEC 001

Dear Ladies and Gentlemen,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

A. Chen

Enclosure

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司

No. 01/03B-08, Floor 7 and No. 01/04B-08, Floor 11, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing, P.R. China

北京市朝阳区东三环中路乙10号艾维克大厦第7层第01、03B-08号，第11层第01、04B-08号
邮编：100022

Tel：(8610)8524 2222
Fax：(8610)8524 2200
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

C E R T I F I C A T E

of Conformity
EC Council Directive 2014/30/EU
Electromagnetic Compatibility

TÜVRheinland®

Registration No.: AE 50551114 0001

Report No.: 50254512 003

Holder:
Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Product:
PV-Inverter
(PV Grid-connected Inverter)

Identification:
R5-3K-T2 R5-4K-T2 R5-5K-T2 R5-6K-T2 R5-8K-T2
R5-9K-T2 R5-10K-T2 R5-12K-T2 R5-3K-T2-15
R5-4K-T2-15 R5-5K-T2-15 R5-6K-T2-15 R5-8K-T2-15
R5-9K-T2-15 R5-10K-T2-15 R5-12K-T2-15
Serial No.: n.a.
Remark: Refer to above-listed test report for details.

Tested acc. to:
EN IEC 61000-6-1:2019
EN IEC 61000-6-2:2019
EN IEC 61000-6-3:2021
EN IEC 61000-6-4:2019

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex I of Council Directive 2014/30/EU. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to the a.m. Directive.

TÜV Rheinland LGA products GmbH Zertifizierungsstelle TÜVRheinland

Certification Body

Tongle Lee

Date 12.07.2022

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may only be used if all relevant and effective EC Directives are complied with. CE

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co., Ltd.

Date : 12.07.2022
Our ref. : AOFEL 02
Your ref.:

No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Ref : AE Certificate of Conformity EMC

Type of Equipment : PV Grid-connected Inverter
Model Designation : See Certificate
Certificate No. : AE 50551114 0001
Report No. : 50254512 003

Dear Ladies and Gentlemen,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

Tongle Lee

Enclosure

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司

Room 301, 3F and Room 1203, 12F, Building C, CATIC Plaza , No. 15, Ronghua South Road, Beijing Economic-Technological Development Area, 100176, Beijing

北京市北京经济技术开发区荣华南路15号院中航技广场C座3层301室、12层1203室
邮编：100176

Tel: 86 10 8524 2222
Fax: 86 10 8524 2200
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

C E R T I F I C A T E

of Conformity
EC Council Directive 2014/30/EU
Electromagnetic Compatibility

TÜVRheinland®

Registration No.: AE 50532264 0001

Report No.: 50254512 002

Holder:
Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Product:
PV-Inverter
(PV Grid-connected Inverter)

Identification:
R5-3K-T2 R5-4K-T2 R5-5K-T2 R5-6K-T2 R5-8K-T2
R5-9K-T2 R5-10K-T2 R5-12K-T2 R5-3K-T2-15
R5-4K-T2-15 R5-5K-T2-15 R5-6K-T2-15 R5-8K-T2-15
R5-9K-T2-15 R5-10K-T2-15 R5-12K-T2-15
Serial No.: n.a.
Remark: Refer to above-listed test report for details.

Tested acc. to:
EN 61000-6-1:2007
EN 61000-6-2:2005
EN 61000-6-3:2007+A1
EN 61000-6-4:2007+A1

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex I of Council Directive 2014/30/EU. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to the a.m. Directive.

TÜV Rheinland LGA Products GmbH Zertifizierungsstelle TÜVRheinland®

Certification Body

Date 24.01.2022

Tongle Lee

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may only be used if all relevant and effective EC Directives are complied with. CE

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

Guangzhou Sanjing Electric Co., Ltd.

Date : 24.01.2022
Our ref. : AOFEL 02
Your ref.:

No.9, Lizhishan Road, Science City,
Guangzhou High-tech Zone,
Guangdong
P.R. China

Ref : AE Certificate of Conformity EMC

Type of Equipment : PV Grid-connected Inverter
Model Designation : See Certificate
Certificate No. : AE 50532264 0001
Report No. : 50254512 002

Dear Ladies and Gentlemen,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

Tongle Lee

Enclosure

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司

Room 301, 3F and Room 1203, 12F, Building C, CATIC Plaza , No. 15, Ronghua South Road, Beijing Economic-Technological Development Area, 100176, Beijing

北京市北京经济技术开发区荣华南路15号院中航技广场C座3层301室、12层1203室
邮编：100176

Tel: 86 10 8524 2222
Fax: 86 10 8524 2200
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

广州三晶电气股份有限公司
Guangzhou Sanjing Electric Co.,Ltd.
Tel：400-159-0088 Fax：020-66608589
Web：www.saj-electric.cn / www.saj-electric.com
地址：广州高新技术产业开发区科学城荔枝山路9号三晶创新园
Add: SAJ Innovation Park, No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China.

EU Declaration of Conformity

We Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Declare under our own responsibility that the product
Name/Trademark:

Model:
Single phase inverter: R5-0.7K-S1, R5-1K-S1, R5-1.5K-S1, R5-2K-S1, R5-2.5K-S1, R5-3K-S1, R5-3K-S2, R5-3.6K-S2, R5-4K-S2, R5-5K-S2, R5-6K-S2, R5-7K-S2, R5-8K-S2
Three-phase inverter: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-13K-T2, R5-15K-T2, R5-17K-T2, R5-20K-T2

Comply with the following directives and regulations:

- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- 2011/65/EU (RoHS Directive)
- DIRECTIVE (EU) 2015/863

For the evaluation of the compliance with these Directives and Regulations, the following standards/requirements were applied:

Safety: EN 62109-1:2010
EN 62109-2:2011
EMC: EN 61000-6-1:2007
EN 61000-6-2:2005,
EN 61000-6-3:2007+A1:2011
EN 61000-6-4:2007+A1:2011
EN 61000-3-2:2014(Maximum AC current ≤ 16A)
EN 61000-3-3:2013(Maximum AC current ≤ 16A)
EN 61000-3-11:2000(Maximum AC current > 16A)
EN 61000-3-12:2011(Maximum AC current > 16A)
RoHS: EN 50581: 2012

Notified Bodies: TÜV Rheinland
INTERTEK

Guangzhou	December 21, 2020	Director of New Energy: Li Yun	Li Yun
Place	Date		Signature

广州三晶电气股份有限公司
Guangzhou Sanjing Electric Co.,Ltd.
Tel：400-159-0088 Fax：020-66608589
Web：www.saj-electric.cn / www.saj-electric.com
地址：广州高新技术产业开发区科学城荔枝山路9号三晶创新园
Add: SAJ Innovation Park, No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China.

EU Declaration of Conformity

We Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Declare under our own responsibility that the product
Name/Trademark:

Model:

Single phase inverter: R5-0.7K-S1, R5-1K-S1, R5-1.5K-S1, R5-2K-S1, R5-2.5K-S1, R5-3K-S1, R5-3K-S2, R5-3.6K-S2, R5-4K-S2, R5-5K-S2, R5-6K-S2, R5-7K-S2, R5-8K-S2

Three-phase inverter: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-13K-T2, R5-15K-T2, R5-17K-T2, R5-20K-T2

Comply with the following directives and regulations:

- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- 2011/65/EU (RoHS Directive)
- DIRECTIVE (EU) 2015/863

For the evaluation of the compliance with these Directives and Regulations, the following standards/requirements were applied:

Safety: EN 62109-1:2010
EN 62109-2:2011

EMC: EN 61000-6-1:2007
EN 61000-6-2:2005,
EN 61000-6-3:2007+A1:2011
EN 61000-6-4:2007+A1:2011
EN 61000-3-2:2014(Maximum AC current ≤ 16A)
EN 61000-3-3:2013(Maximum AC current ≤ 16A)
EN 61000-3-11:2000(Maximum AC current > 16A)
EN 61000-3-12:2011(Maximum AC current > 16A)

RoHS: EN 50581: 2012

Notified Bodies: TÜV Rheinland
INTERTEK

Guangzhou	December 21, 2020	Director of New Energy: Li Yun
Place	Date	Signature

Certificado de Conformidad

Número de certificado: CN-PV-220132

Conforme a los ensayos realizados, la muestra<s> del producto que se detalla a continuación se ajusta a los requisitos de la especificación<s>/norma<s> de referencia en el momento en que se realizaron los ensayos. Esto no implica que Intertek haya realizado ningún tipo de vigilancia o control de la(s) fabricación(es). El o los fabricantes se asegurarán de que el proceso de fabricación cumpla con los productos examinados mencionados en este certificado.

Solicitante:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Producto:	Inversor Fotovoltaico Conectado a la Red
Calificaciones y Características Principales:	Véase el apéndice del Certificado de Conformidad
Modelo:	R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15
Nombre de la Marca<s>:	SAJ
Producto Conforme con:	NTS-631:2020 Norma técnica para el control de conformidad de los módulos de generación de energía según el Reglamento UE 2016/631
Nombre y Dirección de la Oficina Emisora del Certificado:	Intertek Testing Services Ltd.Shanghai West Area, 2nd Floor, No.707, Zhangyang Road China (Shanghai) Pilot Free Trade Zone, Shanghai,P.R.China Acreditado por ACCREDIA de conformidad con la norma ISO/IEC 17065:2012
Informe de la Prueba<s> Nº.:	220614051GZU-001

Información Complementaria en el Apéndice.

Firma

Responsable de la Certificación: Grady
Fecha: 06 de julio de 2022

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

PRD N° 306B

APÉNDICE: Certificado de Conformidad

.

Este es un Apéndice del Certificado de Conformidad Número: CN-PV-220132.

Unidad / Tipo.....:	R5-3K-T2, R5-3K-T2-15	R5-4K-T2, R5-4K-T2-15	R5-5K-T2, R5-5K-T2-15	R5-6K-T2, R5-6K-T2-15	R5-8K-T2, R5-8K-T2-15	R5-9K-T2, R5-9K-T2-15	R5-10K-T2, R5-10K-T2-15	R5-12K-T2, R5-12K-T2-15
Versión de hardware / Número de serie (examinado)..... :	V1.3							
Versión del firmware / Versión del software (examinado) ..... :	V3.055							
Rango de Corriente Continua MPP a plena carga [V]..... :	520-880							
Rango de entrada de Corriente Continua [V]..... :	160-950							
Entrada máxima de Corriente Continua [A] ..... :	12.5/12.5[1)] or 15/15[2)]							
Máximo de Cortocircuito [A] ..... :	15/15[1)] or 18/18[2)]							
Tensión nominal de salida de CA [V] ..... :	230/400V (3~ + N + PE, 50/60Hz)							
Salida máxima de Corriente Alterna [A] :	5,0	6,7	8,4	10,0	13,4	15,0	16,7	18,2
Potencia activa nominal de salida [kW] :	3,0	4,0	5,0	6,0	8,0	9,0	10,0	12,0
Potencia de salida máxima, aparente / activa [kVA / kW] ..... :	3,3	4,4	5,5	6,6	8,8	9,9	11,0	12,0

1) Corriente de entrada máxima (A) = 12,5 y máximo de cortocircuito (A) =15A para R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2,
R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2.
2) Corriente de entrada máxima (A) = 15 y máximo de cortocircuito (A) =18A para R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15.

APÉNDICE: Certificado de Conformidad

Este es un Apéndice del Certificado de Conformidad Número: CN-PV-220132.

Requisito / Requirement	NTS	Tipo / Type	Cumplimiento / Complicant	Nombre Entidad Emisora / Name of issuing Entity	Ev.(*)
Modo regulación potencia-frecuencia limitado sobrefrecuencia (MRPFL-O) / Power-frequency regulation mode limited to overfrequency (MRPFL-O)	5.1	≥A	*YES* (TRF No.220614051GZU-001)	Intertek	P
Modo regulación potencia-frecuencia limitado-subfrecuencia (MRPFL-U) / Power-frequency regulation mode limited to underfrequency (MRPFL-U)	5.2	≥C	NOT APPLICABLE	--	--
Modo regulación potencia-frecuencia (MRPF) / Power-frequency regulation mode (MRPF)	5.3	≥C	NOT APPLICABLE	--	--
Control de potencia-frecuencia / Frequency Control	5.4	≥C	NOT APPLICABLE	--	--
Capacidad de control y el rango de control de la potencia activa en remote / Active Power Requirements	5.5	≥C	NOT APPLICABLE	--	--
Emulación de inercia durante variaciones de frecuencia muy rápidas / Intertia Emualtions	5.6	≥C	NOT APPLICABLE	--	--
Capacidad de potencia reactiva a la capacidad máxima y por debajo / Reactive power capabilities at the EUT rated power and below	5.7	≥B	NOT APPLICABLE	--	--
Modos de control de la potencia reactiva / Reactive power control modes	5.8	≥B	NOT APPLICABLE	--	--
Control de amortiguamiento de oscilaciones / Control of oscillation damping	5.10	≥C	NOT APPLICABLE	--	--
Capacidad para soportar huecos de tensión de los MPE conectados por debajo de 110 kV / Capability to withstand voltage grid faults for POC below 110 kV	5.11	≥B	NOT APPLICABLE	--	--
Capacidad para soportar huecos de tensión de los MPE conectados por encima de 110 kV / Capability to withstand voltage grid faults for POC above 110 kV	5.11	D	NOT APPLICABLE	--	--
Recuperación de la potencia activa después de una falta / Active power recovery after a grid fault	5.11	≥B	NOT APPLICABLE	--	--
Inyección rápida de corriente de falta en el punto de conexión en caso de faltas trifásicas) simétricas / Rapid current injection control	5.11	≥B	NOT APPLICABLE	--	--
Capacidad de participar en el funcionamiento en isla / Islanding requirements	5.13	≥C	NOT APPLICABLE	--	--
(*) Evaluado por / Evaluated by: P: Prueba de conformidad / Test of compliance S: Simulación de conformidad / Simulation of compliance					

Declaration: It is an accurate translation of the original document.

Certificate of Conformity

Certificate Number: CN-PV-190098

On the basis of the tests undertaken, the samples of the below product have been found to comply with the requirements of the referenced specification/standard at the time the tests were carried out. It does not imply that Intertek has performed any surveillance or control of the manufacture. The manufacturer shall ensure that the manufacturing process assures compliance of the production units with the examined products mentioned in this certificate.

Applicant:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Product:	Anti-backflow system
Ratings & Principle Characteristics:	See Annex to Certificate of Conformity
Model:	PV Grid-connected Inverter: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-13K-T2,R5-15K-T2,R5-17K-T2,R5-20K-T2 Three phase smart meter: DTSU666
Brand Name:	SAJ
Tested according to:	UNE 217001 IN: October 2015 Requirements and tests for systems intended to avoid the energy transmission to the distribution network
Certificate Issuing Office Name & Address:	Intertek Testing Services Ltd. Shanghai 2/F (West Side), No. 707, Zhangyang Road, Free Trade Experimental Area, Shanghai, P. R. China
Test Report No.:	191115099GZU-001

Additional information in Appendix.

Signature

Certification Manager: Grady Ye
Date: 07 January 2020

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:

PV Grid-connected Inverter:

Model	R5-3K-T2	R5-4K-T2	R5-5K-T2	R5-6K-T2	R5-8K-T2	R5-9K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc					
Max DC input Current [PV1/PV2]	12.5/12.5 Adc					
Max. Short circuit Current [PV1/PV2]	15/15Adc					
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	4.4	5.8	7.3	8.7	11.6	13.1
Max.AC Current [A]	5.0	6.7	8.4	10.0	13.4	15.0
Grid Frequency	50Hz					
Rated Power [W]	3000	4000	5000	6000	8000	9000
Max. AC power [VA]	3300	4400	5500	6600	8800	9900
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:

Model	R5-10K-T2	R5-12K-T2	R5-13K-T2	R5-15K-T2	R5-17K-T2	R5-20K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc				180-950 Vdc	
Max DC input Current	12.5/12.5 Adc		25/12.5 Adc		25/25 Adc	
Max. Short circuit Current	15/15 Adc		30/15 Adc		30/30 Adc	
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	14.5	17.4	18.9	21.8	24.7	29.0
Max.AC Current [A]	16.7	18.2	21.7	25.0	28.4	33.4
Grid Frequency	50Hz					
Rated Power [W]	1000	12000	13000	15000	17000	20000
Max. AC power [VA]	11000	12000	14300	16500	18700	22000
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:	Three phase smart meter: Voltage: 3 x 230/400V Current: Max.80A Frequency: 50/60Hz Measurement categories: II Type of communication: RS485 Operational temperature: -40℃ - +60℃ Ingress protection: IP 54 Overvoltage category: II Pollution degree: 2 Software Version: communication: V1.011

Verificación de Ensayo de Conformidad

Número de Verificación: 220825091GZU-VOC006

Sobre la base de el(los) informe(s) de ensayo referenciado(s), se ha comprobado que la(s) muestra(s) ensayada(s) del producto indicado a continuación cumple(n) con los estándares armonizados con las directivas enumeradas en esta verificación en el momento en que se realizaron los ensayos. Otros estándares y otras directivas pueden ser pertinentes para el producto. Esta verificación forma parte de el(los) informe(s) de ensayo completo(s) y debe leerse junto con ellos. Esta verificación sustituye a la anterior.

Una vez verificada la conformidad con todas las directivas de la marca CE pertinentes para el producto, incluida cualquier evaluación de riesgos y control de producción pertinente, el fabricante puede indicar la conformidad firmando él mismo una Declaración de Conformidad y aplicando la marca a productos idénticos a la(s) muestra(s)

Nombre y Dirección del Solicitante:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Descripción del Producto:	Inversor PV conectado a la Red
Referencias de Modelos/Tipo:	R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15
Calificaciones y Características Principales:	Ver apéndice
Nombre de la Marca:	SAJ
Estándares/Directivas Pertinentes:	EN IEC 61000-6-3:2021 EN IEC 61000-6-1:2019 EN IEC 61000-6-4:2019 EN IEC 61000-6-2:2019 EMC Directive 2014/30/EU
Nombre & Dirección de la Oficina Emisora de la Verificación:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China
Fecha de Ensayos:	-
Número(s) de Informe de Ensayo:	220825091GZU-006

Información Adicional en el Apéndice.

Sky Zhu

Firma

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

Nombre: **Sky Zhu**

Posición: Jefe de equipo

Fecha: 16 de septiembre de 2022

APÉNDICE: Verificación de Ensayo de Conformidad

Éste es un Apéndice de la Verificación de Ensayo de Conformidad Nº: 220825091GZU-VOC006

Calificaciones y Características Principales:

Modelo	R5-3K-T2, R5-3K-T2-15, R5-3K-T2-AUS	R5-4K-T2, R5-4K-T2-15, R5-4K-T2-AUS	R5-5K-T2, R5-5K-T2-15, R5-5K-T2-AUS	R5-6K-T2, R5-6K-T2-15, R5-6K-T2-AUS
Tensión Máx. PV	1100Vdc; 600Vdc (for suffix with '-AUS' models)			
Tensión MPPT	160-950Vdc; 160-550Vdc (for suffix with '-AUS' models)			
Corriente Máx. de Entrada	12.5A/12.5A, 15A/15A (for suffix with '-15' models)			
PV Isc	15A/15A, 18A/18A (for suffix with '-15' models)			
Tensión Nominal de Salida	3/N/PE, 230Vac/400Vac			
Frecuencia Nominal de Salida	50/60Hz			
Corriente Máx. de Salida	5.0A	6.7A	8.4A	10.0A
Potencia Nominal de Salida	3.0KW	4.0KW	5.0KW	6.0KW
Potencia Aparente Máx.	3.3KVA	4.4KVA	5.5KVA	6.6KVA
Rango del Factor de Potencia	0.8Leading~0.8Lagging			
Nivel de Seguridad	Class I			
Grado de Protección	IP 65			
Temperatura Ambiente de Funcionamiento	-25℃ - +60℃ (>45℃ with derating)			
Firmware	V3.036			

Sky Zhu

Firma

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

Nombre: **Sky Zhu**
Posición: Jefe de equipo
Fecha: 16 de septiembre de 2022

APÉNDICE: Verificación de Ensayo de Conformidad

Éste es un Apéndice de la Verificación de Ensayo de Conformidad Nº: 220825091GZU-VOC006

Calificaciones y Características Principales:

Modelo	R5-8K-T2, R5-8K-T2-15, R5-8K-T2-AUS	R5-9K-T2, R5-9K-T2-15, R5-9K-T2-AUS	R5-10K-T2, R5-10K-T2-15, R5-10K-T2-AUS	R5-12K-T2 R5-12K-T2-15
Tensión Máx. PV	1100Vdc; 600Vdc (for suffix with '-AUS' models)			
Tensión MPPT	160-950Vdc; 160-550Vdc (for suffix with '-AUS' models)			
Corriente Máx. de Entrada	12.5A/12.5A; 11A/22A (for suffix with '-AUS' models); 15A/15A (for suffix with '-15' models)			
PV Isc	15A/15A; 13.2A/26.4A (for suffix with '-AUS' models); 18A/18A (for suffix with '-15' models)			
Tensión Nominal de Salida	3/N/PE, 230Vac/400Vac			
Frecuencia Nominal de Salida	50/60Hz			
Corriente Máx. de Salida	13.4A	15.0A	16.7A	18.2A
Potencia Nominal de Salida	8.0KW	9.0KW	10.0KW	12.0KW
Potencia Aparente Máx.	8.8KVA	9.9KVA	11.0KVA	12.0KVA
Rango del Factor de Potencia	0.8Leading~0.8Lagging			
Nivel de Seguridad	Class I			
Grado de Protección	IP 65			
Temperatura Ambiente de Funcionamiento	-25℃ - +60℃ (>45℃ with derating)			
Firmware	V3.036			

Sky Zhu

Firma

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

Nombre: **Sky Zhu**
Posición: Jefe de equipo
Fecha: 16 de septiembre de 2022
Declaration: It is an accurate translation of the original document.

Verificación de la conformidad de la prueba

Número de verificación: 220825089GZU-VOC006

En base de los informes mencionados sobre las pruebas, se ha comprobado que las muestras probadas del siguiente producto cumplieron con las normas armonizadas con las directivas enumeradas en esta verificación, al momento de la realización de las pruebas. Otras normas y directivas pueden aplicar con el producto. Esta verificación forma parte del informe de pruebas completo y debe leerse junto con él <ellos>.

Una vez que se haya verificado el cumplimiento CE de todas las directivas de marca pertinentes al producto, incluyendo las evaluaciones de riesgos y control de producción pertinentes, el fabricante podrá otorgar su conformidad con su firma en una declaración de conformidad, y aplicando la marca a productos idénticos a las muestras probadas.

Nombre y dirección del solicitante:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Descripción del producto:	Inversor PV conectado a red eléctrica
Características de potencia y principios:	Consulte el APÉNDICE: Verificación de la conformidad de las pruebas
Referencias de modelos/tipo:	Consulte el APÉNDICE: Verificación de la conformidad de las pruebas
Nombre de la marca:	SAJ
Normas/Directivas relevantes:	IEC/EN 62109-1: 2010 Seguridad de conversor de energía para usarse con los Sistemas de Energía Fotovoltaicos Parte 1: Requisitos generales IEC/EN 62109-2:2011 Seguridad de los conversores de energía para usarse con los Sistemas de Energía Fotovoltaicos- Parte 2: Requisitos particulares para inversores De conformidad con la Directiva de Baja Tensión 2014/35/EU
Nombre y dirección de la oficina a cargo de la verificación:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China
Fecha de las pruebas:	10 de agosto de 2021 - 10 de octubre de 2021
Número(s) de informe de prueba:	CN21ACEC 001, tested and issued by TUV Rheinland (Shanghai) Co., Ltd.

Información adicional en el Apéndice.

Jason Fu

Firma

Nombre: Jason Fu
Posición: Supervisor
Fecha: 06 de septiembre de 2022

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

APÉNDICE: Verificación de la conformidad de la prueba

Este es un apéndice de la Prueba de verificación de conformidad Número: 220825089GZU-VOC006

Características de potencia y principios:

Modelo	R5-3K-T2, R5-3K-T2-15, R5-3K-T2-AUS	R5-4K-T2, R5-4K-T2-15, R5-4K-T2-AUS	R5-5K-T2, R5-5K-T2-15, R5-5K-T2-AUS	R5-6K-T2, R5-6K-T2-15, R5-6K-T2-AUS
Tensión PV máx.	1100Vdc; 600Vdc (for suffix with '-AUS' models)			
Tensión MPPT	160-950Vdc; 160-550Vdc (for suffix with '-AUS' models)			
Entrada máxima corriente	12.5A/12.5A, 15A/15A (for suffix with '-15' models)			
PV Isc	15A/15A, 18A/18A (for suffix with '-15' models)			
Tensión nominal de salida	3/N/PE, 230Vac/400Vac			
Frecuencia nominal de salida	50/60Hz			
Corriente de salida máx.	5.0A	6.7A	8.4A	10.0A
Energía nominal de salida	3.0KW	4.0KW	5.0KW	6.0KW
Energía aparente máx.	3.3KVA	4.4KVA	5.5KVA	6.6KVA
Rango del factor de potencia	0.8Leading~0.8Lagging			
Nivel de seguridad	Class I			
Protección contra el ingreso	IP 65			
Temperatura ambiente de funcionamiento	-25℃ - +60℃ (>45℃ with derating)			
Firmware	V3.036			

Jason Fu

Firma

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

Nombre: Jason Fu
Posición: Supervisor
Fecha: 06 de septiembre de 2022

APÉNDICE: Verificación de la conformidad de la prueba

Este es un apéndice de la Prueba de verificación de conformidad Número: 220825089GZU-VOC006

Características de potencia y principios:

Modelo	R5-8K-T2, R5-8K-T2-15, R5-8K-T2-AUS	R5-9K-T2, R5-9K-T2-15, R5-9K-T2-AUS	R5-10K-T2, R5-10K-T2-15, R5-10K-T2-AUS	R5-12K-T2 R5-12K-T2-15
Tensión PV máx.	1100Vdc; 600Vdc (for suffix with '-AUS' models)			
Tensión MPPT	160-950Vdc; 160-550Vdc (for suffix with '-AUS' models)			
Entrada máxima corriente	12.5A/12.5A; 11A/22A (for suffix with '-AUS' models); 15A/15A (for suffix with '-15' models)			
PV Isc	15A/15A; 13.2A/26.4A (for suffix with '-AUS' models); 18A/18A (for suffix with '-15' models)			
Tensión nominal de salida	3/N/PE, 230Vac/400Vac			
Frecuencia nominal de salida	50/60Hz			
Corriente de salida máx.	13.4A	15.0A	16.7A	18.2A
Energía nominal de salida	8.0KW	9.0KW	10.0KW	12.0KW
Energía aparente máx.	8.8KVA	9.9KVA	11.0KVA	12.0KVA
Rango del factor de potencia	0.8Leading~0.8Lagging			
Nivel de seguridad	Class I			
Protección contra el ingreso	IP 65			
Temperatura ambiente de funcionamiento	-25℃ - +60℃ (>45℃ with derating)			
Firmware	V3.036			

Jason Fu

Firma

SHANGHAI FOREIGN AFFAIRS SERVICE CENTER 上海外事服务中心 翻译专用章 (2) CERTIFIED TRANSLATION

Nombre: Jason Fu
Posición: Supervisor
Fecha: 06 de septiembre de 2022
Declaration: It is an accurate translation of the original document.

Certificate of Conformity

Certificate Number: CN-PV-230157

On the basis of the tests undertaken, the sample<s> of the below product have been found to comply with the requirements of the referenced specification<s>/standard<s> at the time the tests were carried out. It does not imply that Intertek has performed any surveillance or control of the manufacture(s). The manufacturer(s) shall ensure that the manufacturing process assures compliance of the production units with the examined products mentioned in this certificate.

Applicant:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong P.R. China
Product:	PV Grid-Connected Inverter
Ratings & Principle Characteristics:	See appendix of Certificate of Conformity
Model:	R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15
Brand Name<s>:	SAJ
Product Complies with:	UNE 217001:2020 Tests for systems that avoid the discharge of energy to the distribution network
Certificate Issuing Office Name & Address:	Intertek Testing Services Ltd. Shanghai West Area, 2nd Floor, No. 707, Zhangyang Road China (Shanghai) Pilot Free Trade Zone, Shanghai, P. R. China Accredited by ACCREDIA in accordance with ISO/IEC 17065:2012
Test Report No.<s>:	220411134GZU-002

Additional information in Appendix.

Signature

Certification Manager: Grady Ye
Date: 06 April 2023

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRD N° 306B

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-230157

Model list		R5-3K-T2, R5-3K-T2-15	R5-4K-T2, R5-4K-T2-15	R5-5K-T2, R5-5K-T2-15	R5-6K-T2, R5-6K-T2-15
PV INPUT	VMAX PV[Vdc]	1100			
	ISC PV[A]	15/15, 18/18(for suffix with '-15' models)			
	MPPT Voltage Range VMPP[Vdc]	160-950			
	Max. Input Current IMAX [A]	12.5/12.5, 15/15(for suffix with '-15' models)			
	MPPT Full Power Voltage Range [Vdc]	520-880			
	Number of MPPT	2			
	String per MPPT	1/1			
	Backfeed Current [A]	0			
	Overvoltage Category [OVC]	II			
AC Side (ON-Grid)	Rated Output Voltage Ur [Vac]	3L/N/PE,230/400			
	Rated Output Frequency FNETZ [Hz]	50/60			
	Rated Output Power PE [KW]	3000	4000	5000	6000
	Max. Apparent power SEmax [KVA]	3300	4400	5500	6600
	Rated Output Current Ir [A]	3*4.4	3*5.8	3*7.3	3*8.7
	Max. Output Current Imax [A]	3*5.0	3*6.7	3*8.4	3*10.0
	Power Factor (cosϕ)	0.8 leading ~ 0.8 lagging			
	THD [V/I](100% full power	< 3%			
	Overvoltage Category [OVC]	III			
CONSTRUCTON	Hardware [Version]	V1.002			
	Firmware [Version]	V3.036			
	Array Insulation Resistance Detection[Ω]	150K			
	Type of inverter	Non-isolated			
	Separated by	Transformerless			
	Type of NS Protection	Integrated			
	Protective Class	Class I			
	Enclosure Protection [IP]	IP65			
	Operating Temperature Range [℃]	-40℃ to +60℃ (45℃ to 60℃ with derating)			
	Pollution degree [PD]	PD3			
Remark:					

APPENDIX: Certificate of Conformity

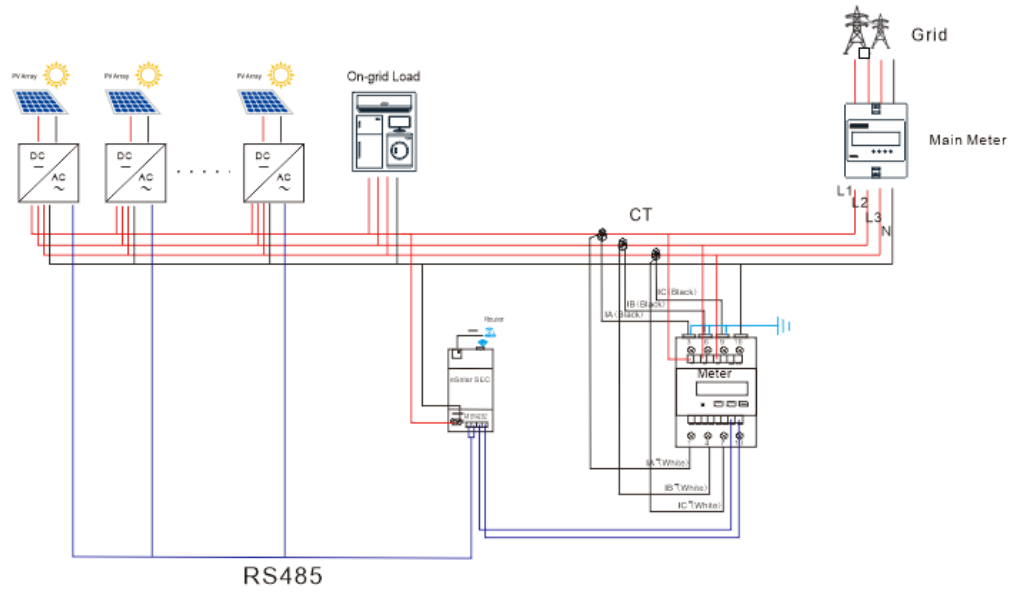
This is an Appendix to Certificate of Conformity Number: CN-PV-230157

Model list		R5-8K-T2, R5-8K-T2-15	R5-9K-T2, R5-9K-T2-15	R5-10K-T2, R5-10K-T2-15	R5-12K-T2, R5-12K-T2-15
PV INPUT	VMAX PV[Vdc]	1100			
	ISC PV[A]	15/15, 18/18(for suffix with '-15' models)			
	MPPT Voltage Range VMPP[Vdc]	160-950			
	Max. Input Current IMAX [A]	12.5/12.5, 15/15(for suffix with '-15' models)			
	MPPT Full Power Voltage Range [Vdc]	520-880			
	Number of MPPT	2			
	String per MPPT	1/1			
	Backfeed Current [A]	0			
	Overvoltage Category [OVC]	II			
AC Side (ON-Grid)	Rated Output Voltage Ur [Vac]	3L/N/PE,230/400			
	Rated Output Frequency FNETZ [Hz]	50/60			
	Rated Output Power PE [KW]	8000	9000	10000	12000
	Max. Apparent power SEmax [KVA]	8800	9900	11000	12000
	Rated Output Current Ir [A]	3*11.6	3*13.1	3*14.5	3*17.4
	Max. Output Current Imax [A]	3*13.4	3*15.0	3*16.7	3*18.2
	Power Factor (cosϕ)	0.8 leading ~ 0.8 lagging			
	THD [V/I] (100% full power	< 3%			
	Overvoltage Category [OVC]	III			
CONSTRUCTON	Hardware [Version]	V1.002			
	Firmware [Version]	V3.036			
	Array Insulation Resistance Detection[Ω]	150K			
	Type of inverter	Non-isolated			
	Separated by	Transformerless			
	Type of NS Protection	Integrated			
	Protective Class	Class I			
	Enclosure Protection [IP]	IP65			
	Operating Temperature Range [℃]	-40℃ to +60℃(45℃ to 60℃ with derating)			
	Pollution degree [PD]	PD3			
Remark:					

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-230157.

Installation scheme:



Maximum number of inverters to be connected in parallel is:

Using energy meter CHINT DTSU666, maximum number of inverters connected in parallel are 10

Certificate of Conformity

Certificate Number: CN-PV-190098

On the basis of the tests undertaken, the samples of the below product have been found to comply with the requirements of the referenced specification/standard at the time the tests were carried out. It does not imply that Intertek has performed any surveillance or control of the manufacture. The manufacturer shall ensure that the manufacturing process assures compliance of the production units with the examined products mentioned in this certificate.

Applicant:	Guangzhou Sanjing Electric Co., Ltd. No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Product:	Anti-backflow system
Ratings & Principle Characteristics:	See Annex to Certificate of Conformity
Model:	PV Grid-connected Inverter: R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-13K-T2,R5-15K-T2,R5-17K-T2,R5-20K-T2 Three phase smart meter: DTSU666
Brand Name:	SAJ
Tested according to:	UNE 217001 IN: October 2015 Requirements and tests for systems intended to avoid the energy transmission to the distribution network
Certificate Issuing Office Name & Address:	Intertek Testing Services Ltd. Shanghai 2/F (West Side), No. 707, Zhangyang Road, Free Trade Experimental Area, Shanghai, P. R. China
Test Report No.:	191115099GZU-001

Additional information in Appendix.

Signature

Certification Manager: Grady Ye
Date: 07 January 2020

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:

PV Grid-connected Inverter:

Model	R5-3K-T2	R5-4K-T2	R5-5K-T2	R5-6K-T2	R5-8K-T2	R5-9K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc					
Max DC input Current [PV1/PV2]	12.5/12.5 Adc					
Max. Short circuit Current [PV1/PV2]	15/15Adc					
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	4.4	5.8	7.3	8.7	11.6	13.1
Max.AC Current [A]	5.0	6.7	8.4	10.0	13.4	15.0
Grid Frequency	50Hz					
Rated Power [W]	3000	4000	5000	6000	8000	9000
Max. AC power [VA]	3300	4400	5500	6600	8800	9900
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:

Model	R5-10K-T2	R5-12K-T2	R5-13K-T2	R5-15K-T2	R5-17K-T2	R5-20K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc				180-950 Vdc	
Max DC input Current	12.5/12.5 Adc		25/12.5 Adc		25/25 Adc	
Max. Short circuit Current	15/15 Adc		30/15 Adc		30/30 Adc	
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	14.5	17.4	18.9	21.8	24.7	29.0
Max.AC Current [A]	16.7	18.2	21.7	25.0	28.4	33.4
Grid Frequency	50Hz					
Rated Power [W]	1000	12000	13000	15000	17000	20000
Max. AC power [VA]	11000	12000	14300	16500	18700	22000
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

APPENDIX: Certificate of Conformity

This is an Appendix to Certificate of Conformity Number: CN-PV-190098

Ratings & Principle Characteristics:	Three phase smart meter: Voltage: 3 x 230/400V Current: Max.80A Frequency: 50/60Hz Measurement categories: II Type of communication: RS485 Operational temperature: -40℃ - +60℃ Ingress protection: IP 54 Overvoltage category: II Pollution degree: 2 Software Version: communication: V1.011

TEST REPORT
UNE 217001:2020
Tests for systems that avoid the discharge of energy to the distribution network

Report Reference No…… ...:	220411134GZU-002
Date of issue……:	23 Mar 2023
Total number of pages……:	36 pages

Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address.....	Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China
Testing location/ address.....	Same as above
Tested by (name + signature)……:	Rex Liu Engineer
Approved by (+ signature).....	Jason Fu Supervisor

Applicant's name	Guangzhou Sanjing Electric Co., Ltd.
Address.....	No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong P.R. China

Test specification:	
Standard	UNE 217001:2020
Test procedure.....	Type approval
Non-standard test method……..:	N/A

Test Report Form No.	UNE 217001b
Test Report Form(s) Originator	Intertek Guangzhou
Master TRF.....	Dated 2021-05

Test item description	PV Grid-connected Inverter
Trade Mark.....	SAJ
Manufacturer.....	Guangzhou Sanjing Electric Co., Ltd.
Model/Type reference.....	R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2, R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15

Ratings .....

Model list		R5-3K-T2, R5-3K-T2-15	R5-4K-T2, R5-4K-T2-15	R5-5K-T2, R5-5K-T2-15	R5-6K-T2, R5-6K-T2-15
PV INPUT	VMAX PV[Vdc]	1100			
	ISC PV[A]	15/15, 18/18(for suffix with '-15' models)			
	MPPT Voltage Range VMPP[Vdc]	160-950			
	Max. Input Current IMAX [A]	12.5/12.5, 15/15(for suffix with '-15' models)			
	MPPT Full Power Voltage Range [Vdc]	520-880			
	Number of MPPT	2			
	String per MPPT	1/1			
	Backfeed Current [A]	0			
	Overvoltage Category [OVC]	II			
AC Side (ON-Grid)	Rated Output Voltage Ur [Vac]	3L/N/PE,230/400			
	Rated Output Frequency FNETZ [Hz]	50/60			
	Rated Output Power PE [KW]	3000	4000	5000	6000
	Max. Apparent power SEmax [KVA]	3300	4400	5500	6600
	Rated Output Current Ir [A]	3*4.4	3*5.8	3*7.3	3*8.7
	Max. Output Current Imax [A]	3*5.0	3*6.7	3*8.4	3*10.0
	Power Factor (cosφ)	0.8 leading ~ 0.8 lagging			
	THD [V/I](100% full power	＜3%			
	Overvoltage Category [OVC]	III			
CONSTR UCTION	Hardware [Version]	V1.002			
	Firmware [Version]	V3.036			

	Array Insulation Resistance Detection[Ω]	150K
	Type of inverter	Non-isolated
	Separated by	Transformerless
	Type of NS Protection	Integrated
	Protective Class	Class I
	Enclosure Protection [IP]	IP65
	Operating Temperature Range [℃]	-40℃ to +60℃(45℃ to 60℃ with derating)
	Pollution degree [PD]	PD3
Remark:		

Model list		R5-8K-T2, R5-8K-T2-15	R5-9K-T2, R5-9K-T2-15	R5-10K-T2, R5-10K-T2-15	R5-12K-T2, R5-12K-T2-15
PV INPUT	VMAX PV[Vdc]	1100			
	ISC PV[A]	15/15, 18/18(for suffix with '-15' models)			
	MPPT Voltage Range VMPP[Vdc]	160-950			
	Max. Input Current IMAX [A]	12.5/12.5, 15/15(for suffix with '-15' models)			
	MPPT Full Power Voltage Range [Vdc]	520-880			
	Number of MPPT	2			
	String per MPPT	1/1			
	Backfeed Current [A]	0			
	Overvoltage Category [OVC]	II			
AC Side (ON-Grid)	Rated Output Voltage Ur [Vac]	3L/N/PE,230/400			
	Rated Output Frequency FNETZ [Hz]	50/60			
	Rated Output Power PE [KW]	8000	9000	10000	12000
	Max. Apparent power SEmax	8800	9900	11000	12000

		[KVA]				
		Rated Output Current Ir [A]	3*11.6	3*13.1	3*14.5	3*17.4
		Max. Output Current Imax [A]	3*13.4	3*15.0	3*16.7	3*18.2
		Power Factor (cosφ)	0.8 leading ~ 0.8 lagging			
		THD [V/I] (100% full power	＜3%			
		Overvoltage Category [OVC]	III			
	CONSTRUCTON	Hardware [Version]	V1.002			
		Firmware [Version]	V3.036			
		Array Insulation Resistance Detection[Ω]	150K			
		Type of inverter	Non-isolated			
		Separated by	Transformerless			
		Type of NS Protection	Integrated			
		Protective Class	Class I			
		Enclosure Protection [IP]	IP65			
		Operating Temperature Range [℃]	-40℃ to +60℃(45℃ to 60℃ with derating)			
		Pollution degree [PD]	PD3			
	Remark:					

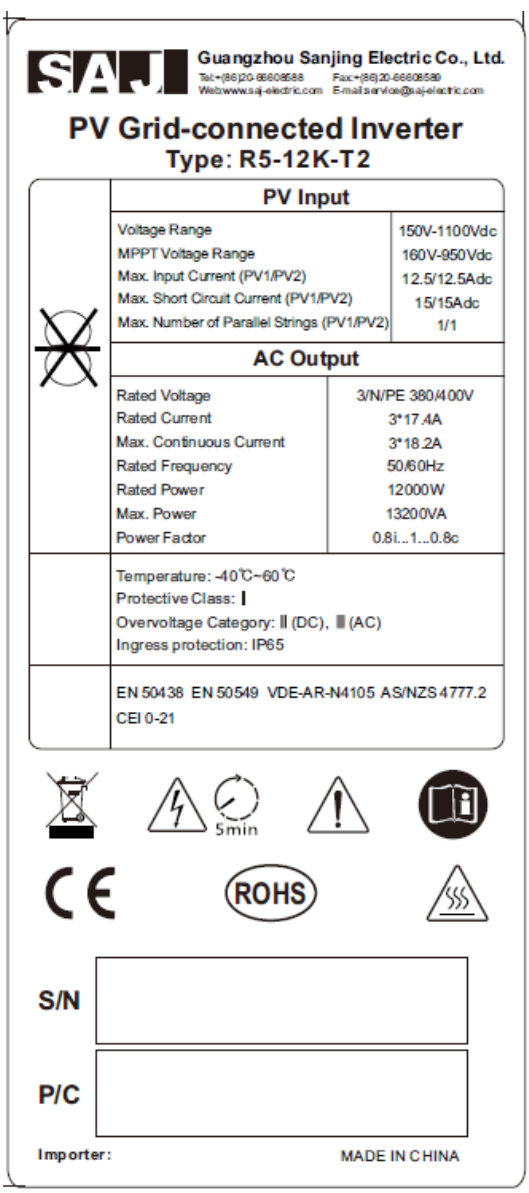
List of installation components:

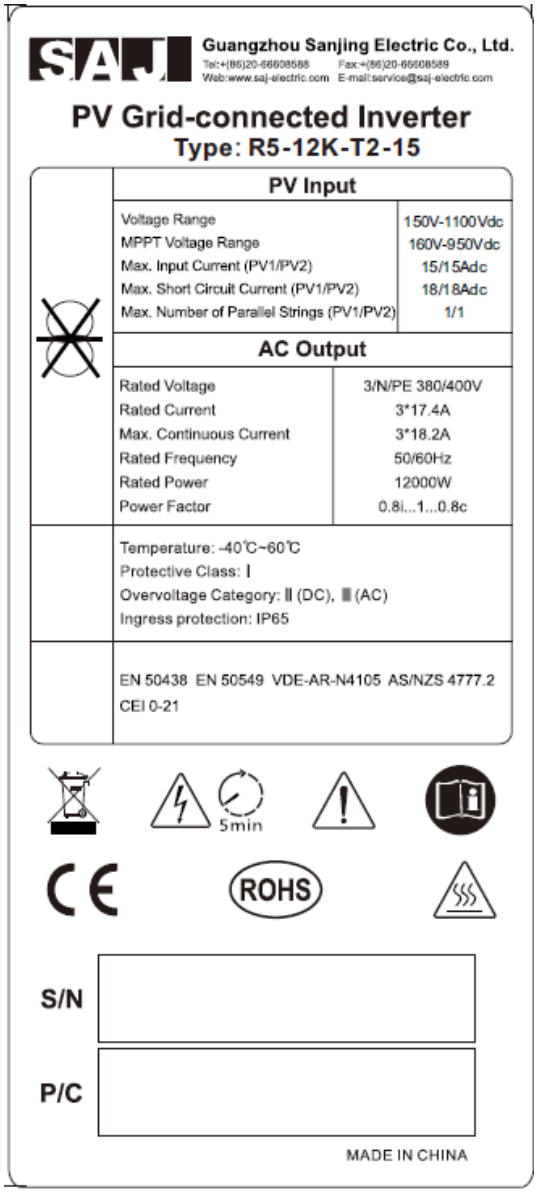
Type of appliance/ Installation…….:	Three-Phase Smart meter / DIN-Rail
Manufacturer / Distributor / Installer:	Zhejiang CHINT Instrument & Meter Co., Ltd.
Brand……:	CHINT
Model/Type……..:	DTSU666
Rating……:	230Vac, 0.05~1.5(6)A with CT (Ratio 50:1), 50/60Hz, 6400imp/KWh Power accuracy: Active Class 0.5S, Reactive Class 1 IP51 Firmware Version:3.05

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests The model R5-12K-T2-15 is type tested.	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China

Copy of marking plate





Note:

1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. Label is attached on the side surface of enclosure and visible after installation
3. The other model labels are identical with label above, except the model's name and rating.

Test item particulars:	
Temperature range:	-40℃ - 60℃
AC Overvoltage category:	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
DC Overvoltage category:	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV
IP protection class:	IP 65
Possible test case verdicts:	
- test case does not apply to the test object:	N/A (Not applicable)
- test object does meet the requirement:	P (Pass)
- test object does not meet the requirement:	F (Fail)
Testing:	
Date of receipt of test item:	11 Apr 2022
Date (s) of performance of tests:	11 Apr 2022 – 22 Mar 2023

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

When determining for test conclusion, measurement uncertainty of tests has been considered.
This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

Throughout this report a point is used as the decimal separator.

General product information:
Description of tested item:

The equipment is triple-phase utility-interactive type PV inverter which will be installed and connected to the grid network after installation.

It contains filters for smoothing the output voltage and for EMC, switching and control circuits. Electronic circuits are mounted on a number of PCBs interconnected by appropriate connectors and wires. Power board including electronics components is mounted on the heat sink to earthing by metal screw and spring washer.

There are included a USB and RS485 communication ports which are connected to the monitors to monitor the status of the inverter by proprietary software.

The PV input combiner with 2 string MPPT tracers and each MPPT tracer including two PV input terminals. AC output direct connected to grid and protective earthing are provided by dedicated earthing terminals. Grid is protected combination with a two series of relays as redundant build for ensure the inverter can independent disconnected from gird while a relay was fault.

During fault condition defined in this standard, after the DSP receives the abnormal signal from the relevant protective detection circuit, the relays will operate to disconnect the PV inverter active lines from grid automatically.

The master DSP and slaver DSP has capacity independent disconnected from gird, when any grid fault had happened.

There is a communication RS485 to the computer also can monitor the status of the inverter by proprietary and control the PCE.

The maximum ambient temperature permitted by the manufacturer's specification is 60°C and derate the output power from 45°C.

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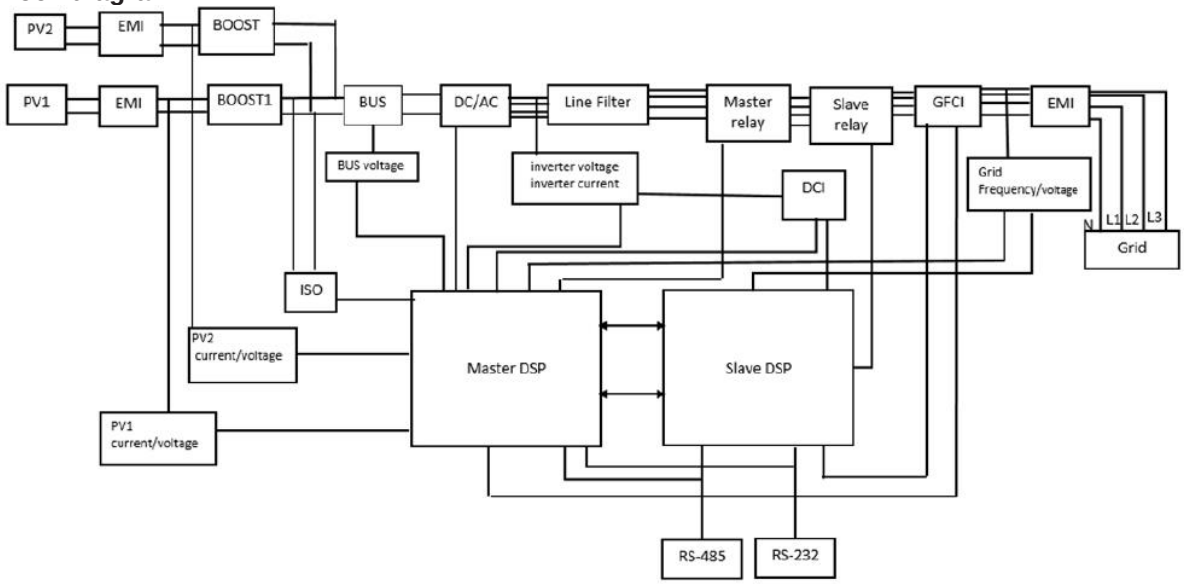
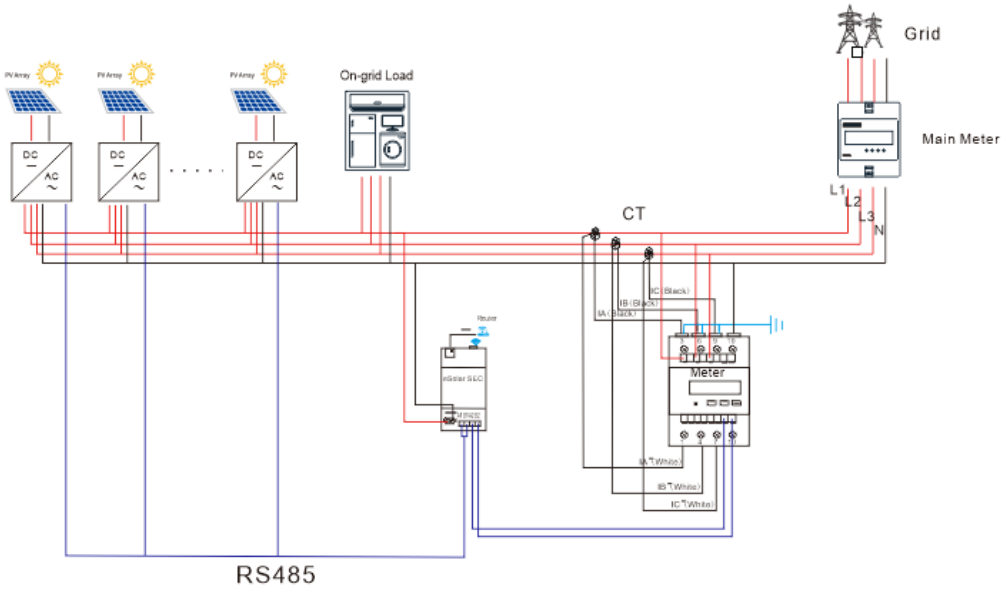
Block diagram:

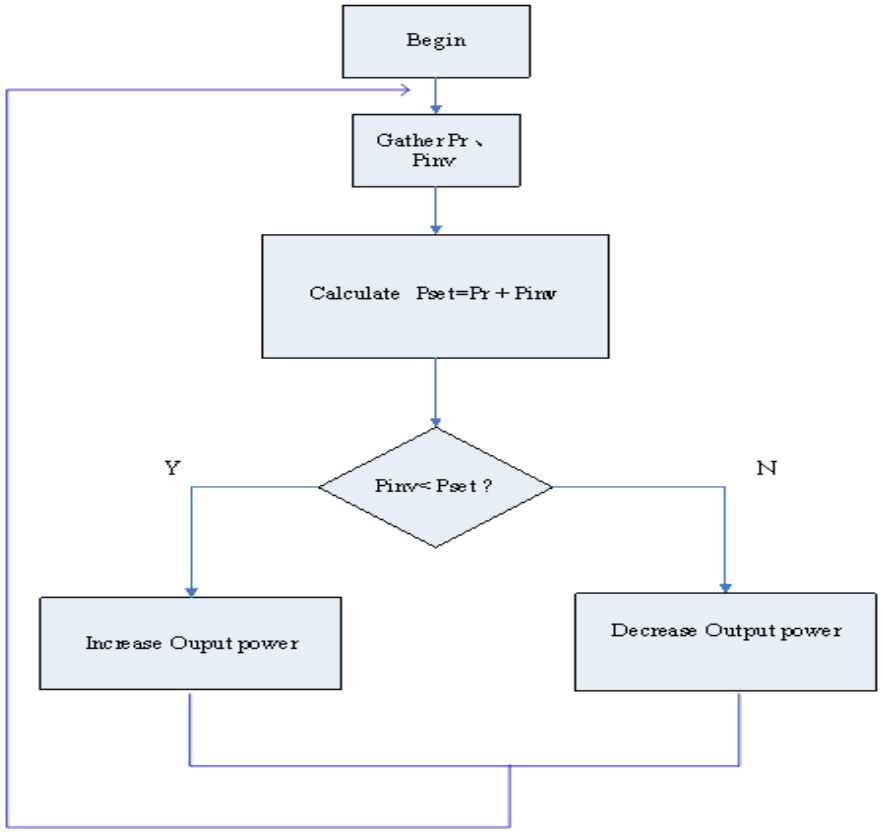


Basic outline of the system:



In the grid-connected power generation system, because the user load and light are constantly changing, in order to prevent the grid-connected system from generating electricity in the reverse direction to the power grid, the monitoring meter is added. The inverter communicates with the meter through the RS485 interface to collect the grid-connected port current in real time. And power signals, and calculate the maximum output power limit value of the inverter according to the meter's feedback power and current data, adjust the inverter output power to achieve the anti-backflow function, and maximize the use of photovoltaic modules to generate power;

Control algorithm:



Variable	Statement
Pr	The power detected by the meter. Negative values represent reverse current, while positive values represent absorbed power from the grid.
Pset	Inverter power limit setting
Pinv	Inverter operating output power

Pset= Pinv + Pr； When the current output power of the inverter is greater than the load power, the inverter supplies power to the load and reverses the current to the grid. At this time, it is detected that Pr is negative, and the inverter limit power setting value is reduced;
When the current output power of the inverter is less than the load power, the load must also absorb power from the grid at this time. At this time, it is detected that Pr is a positive value, and the inverter limit power setting value is increased;

Difference of the models:
The models R5-3K -T2, R5-4K -T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2 , R5-12K-T2 , R5-3K -T2-15, R5-4K -T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15 and R5-12K-T2-15 same as the enclosure size, construction, software logistic and hardware construction, just the output power are different adjustable by software, except the difference as below:

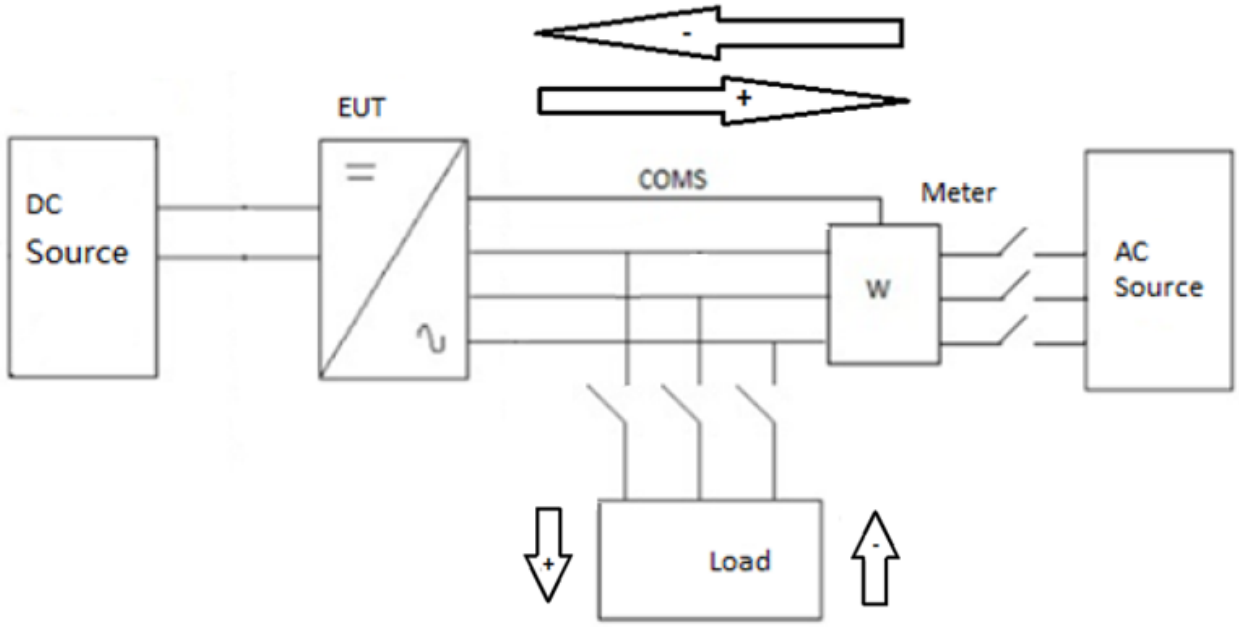
Model	R5-3K-T2, R5-3K-T2-15	R5-4K-T2, R5-4K-T2-15	R5-5K-T2, R5-5K-T2-15	R5-6K-T2, R5-6K-T2-15	R5-8K-T2, R5-8K-T2-15	R5-9K-T2, R5-9K-T2-15	R5-10K-T2, R5-10K-T2-15	R5-12K-T2, R5-12K-T2-15
Output power	3 kW	4 kW	5 kW	6 kW	8 kW	9 kW	10 kW	12 kW
MPPT string	2							
Max. Input Current I_{MAX} [A] (A/B) (each MPPT)	12.5/12.5[1] or 15/15[2]							
Max. Short circuit current (A)	15/15[1] or 18/18[2]							
BUS capacitor	2			4				

Note:
1) Max. Input current (A) = 12.5 and Max. Short circuit(A) =15A for R5-3K-T2, R5-4K-T2, R5-5K-T2, R5-6K-T2, R5-8K-T2, R5-9K-T2, R5-10K-T2, R5-12K-T2.
2) Max. Input current (A) = 15 and Max. Short circuit(A) =18A for R5-3K-T2-15, R5-4K-T2-15, R5-5K-T2-15, R5-6K-T2-15, R5-8K-T2-15, R5-9K-T2-15, R5-10K-T2-15, R5-12K-T2-15.

The testings were performed on:
Hardware version: V1.002
Firmware version: V3.036

Test of setup:

Maximum power injected during the registration time, in Watts. Negative values indicate that the inverter and load system consume, i.e. there is no power injection into the network, in those cases, the consumption values closest to the power injection have been taken.



In the results tables are positive the power injection values from the inverter to loads, and negative the values consumed by the loads. Values from network to loads are also negative, so if injection from the inverter to the net would occur this would look like positive values.

Factory and address: Guangzhou Sanjing Electric Co., Ltd.
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R. China

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict
3	**Installation configuration**		P
3.1	Measurement of energy exchange with the grid		P
3.2	Consumption measurement		P
4	**Essays**		P
4.1	Permanent tolerance		P
4.2	Response to load disconnections		P
4.3	Response to power increases in the primary energy source		P
4.4	Action in case of loss of communications		P
4.5	Determination of the maximum number of generators	N_{max}: 10	P

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

4.1	Permanent tolerance						P
	Test No.	Load			Power injection to the grid (W)	Tolerance (%)	Limit
	--	Phase R	Phase S	Phase T			
Single phase	1	90-100%	--	--	--	--	<-1%
	2	10-20%	--	--	--	--	<-1%
	3	0	--	--	--	--	<-1%
Three-phase	--	90-100%	90-100%	90-100%	-242.29	-2.0%	<-1%(-120W)
	--	10-20%	10-20%	10-20%	-270.61	-2.3%	
	--	0	0	0	-288.36	-2.4%	
	--	90-100%	60-70%	60-70%	-1496.47	-12.5%	
	--	60-70%	60-70%	60-70%	-275.01	-2.3%	
	--	30-40%	60-70%	60-70%	-2773.56	-23.1%	
	--	0	60-70%	60-70%	-5381.24	-44.8%	

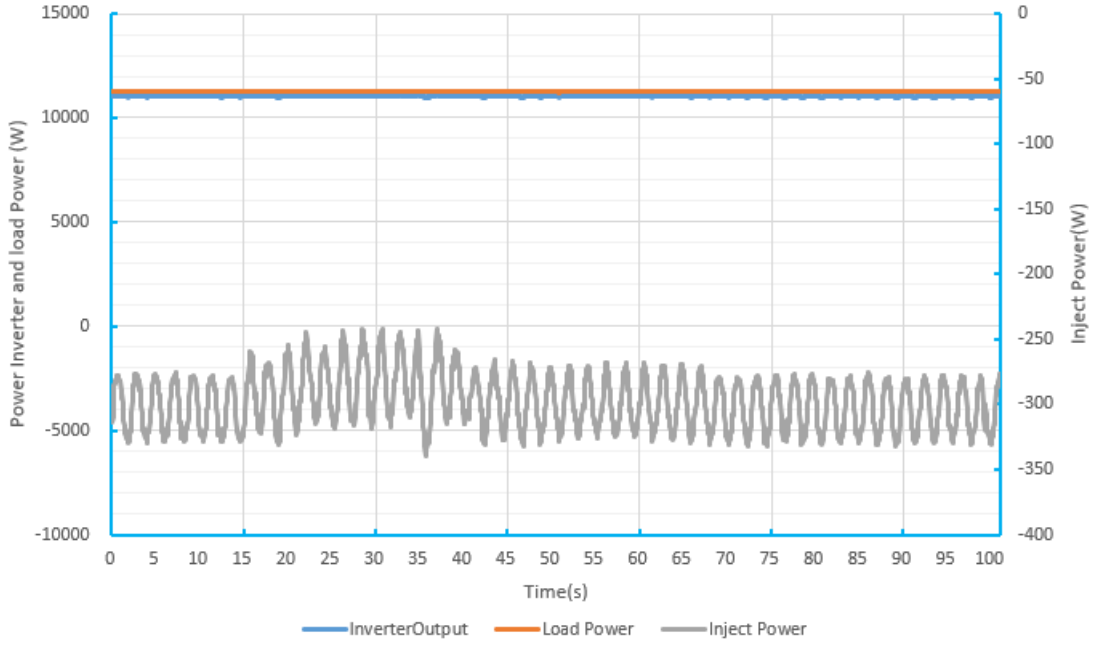
Remark:

The sum of the tolerance of the power analyzer and current measured are 1%

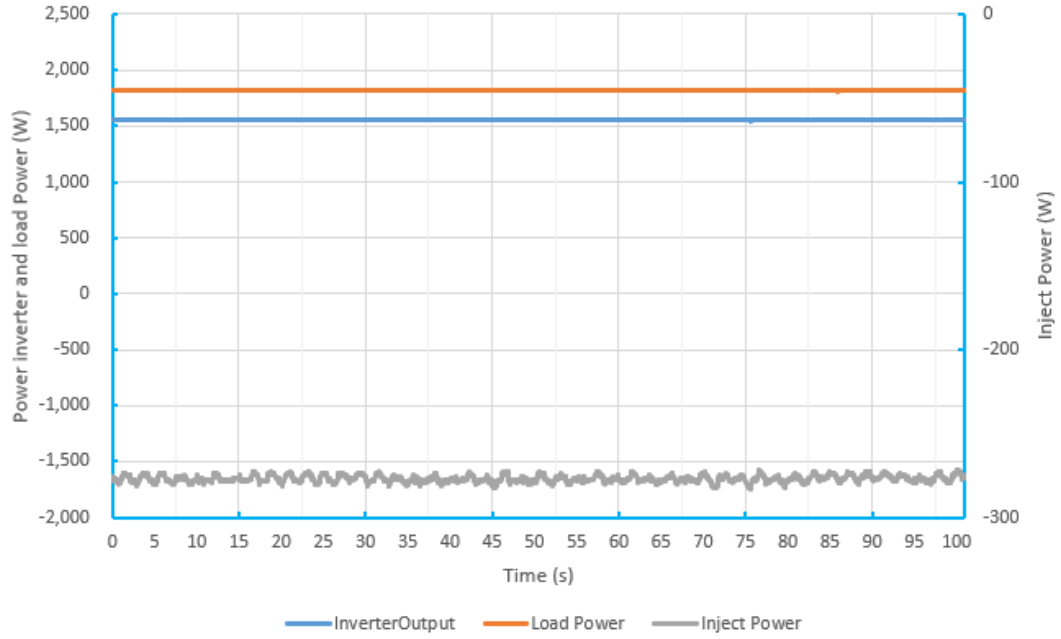
Tested with energy meter DTSU666

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_Test 1

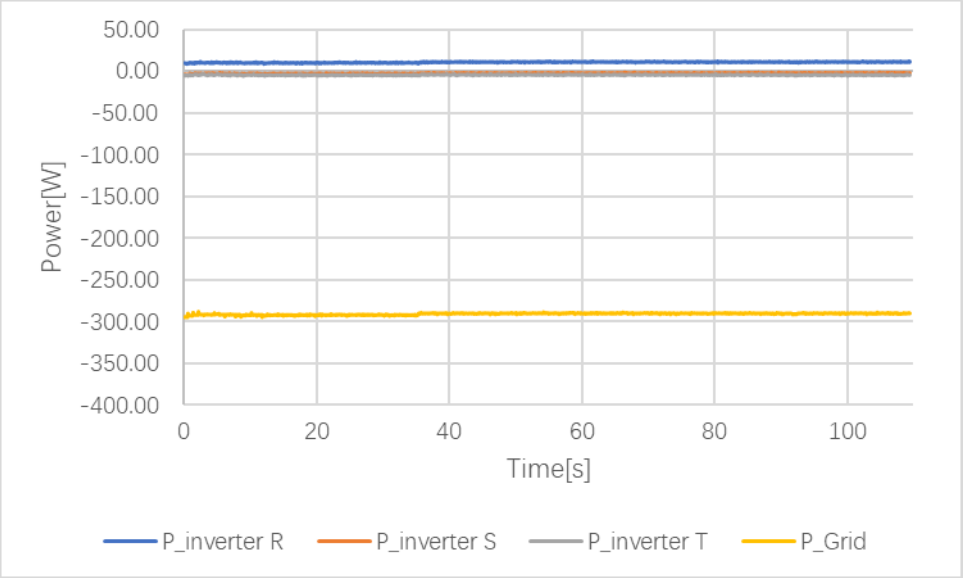


Graph_Test 2

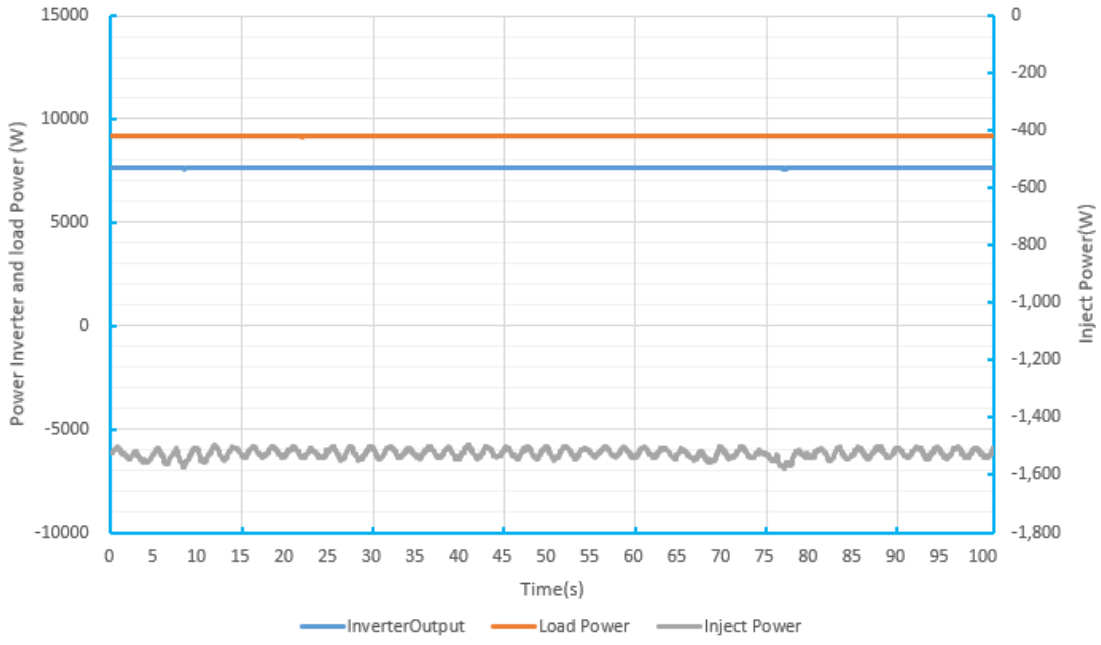


UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_Test 3

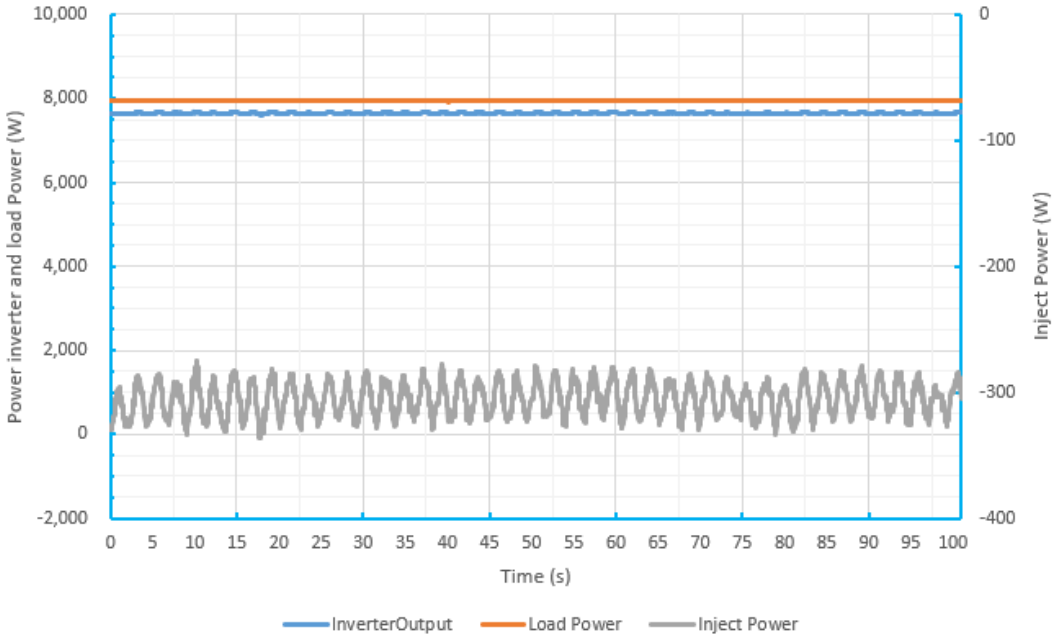


Graph_Test 4

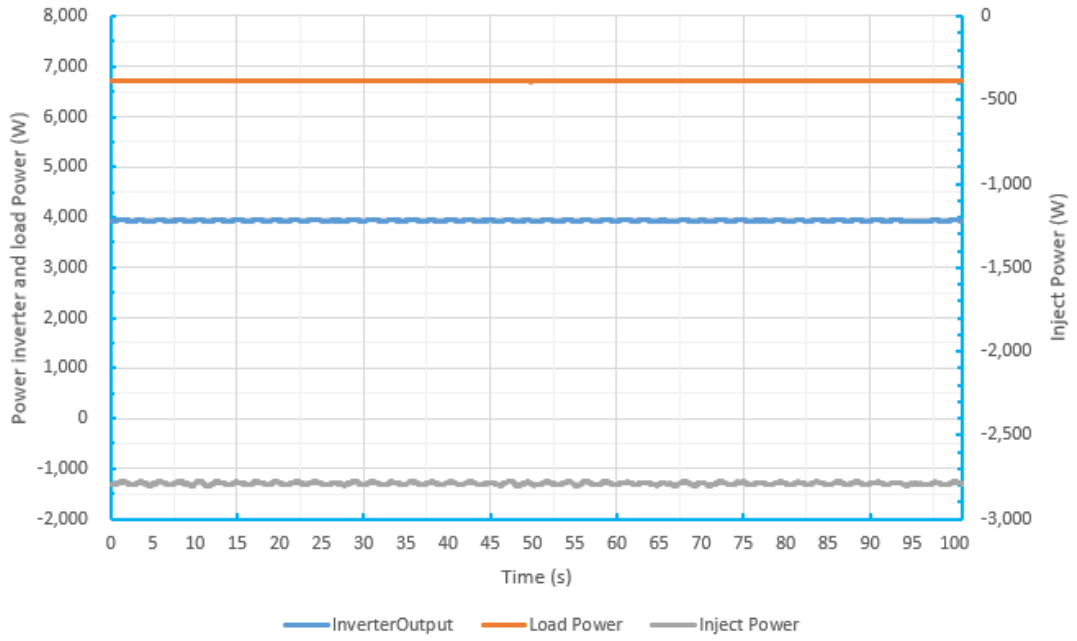


UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_Test 5

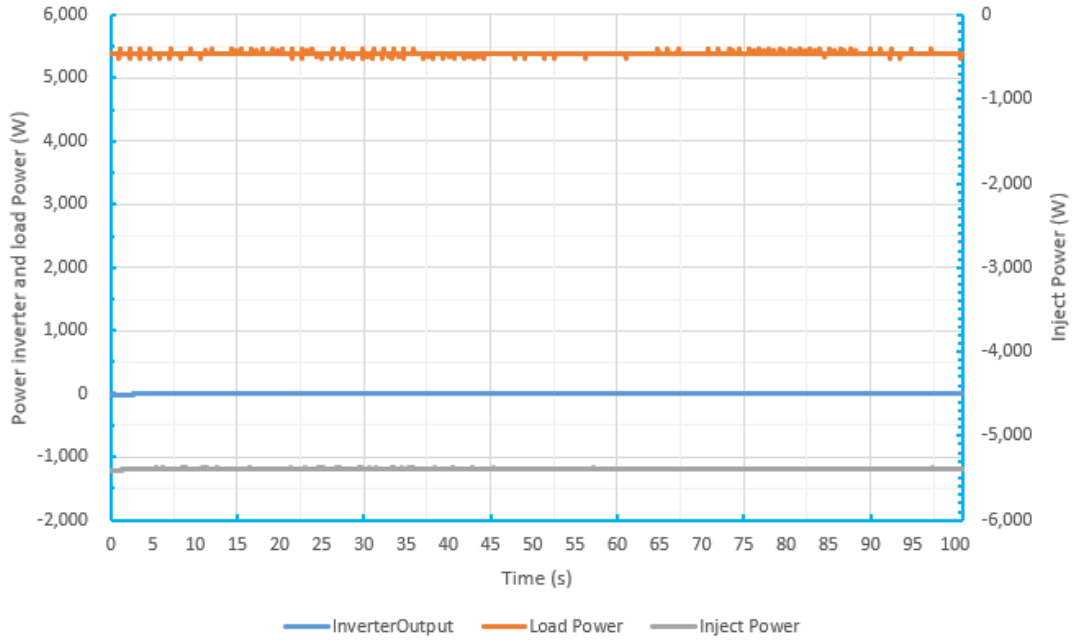


Graph_Test 6



UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_Test 7

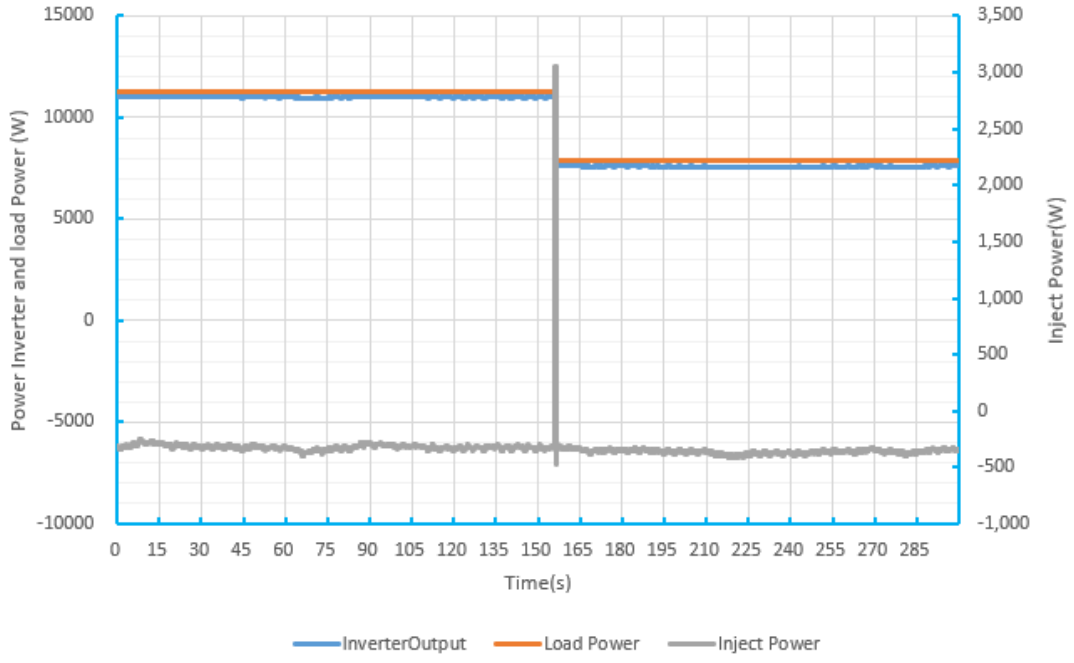


UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

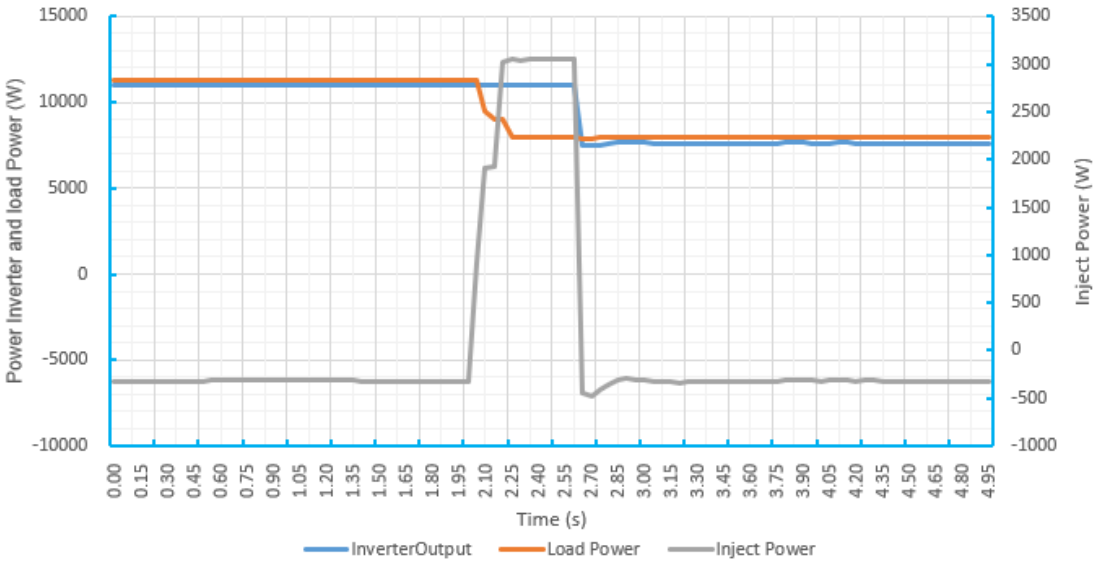
4.2	Response to load disconnections							P
Test No.	Initial Load	Final load	After disconnection re-adjust time <2s			Frequency [Hz]		
1	90-100%	60-70%	0.578	0.528	0.748	50.00	50.00	50.01
2	90-100%	30-40%	0.756	0.500	0.720	50.00	50.00	49.98
3	90-100%	0-5%	0.422	0.498	0.576	49.99	50.00	50.00
4	60-70%	30-40%	0.878	0.610	0.644	50.00	50.00	49.99
5	60-70%	0-5%	0.496	0.642	0.552	50.00	50.00	50.00
6	30-40%	0-5%	0.712	0.604	0.568	50.01	50.00	50.00

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 1



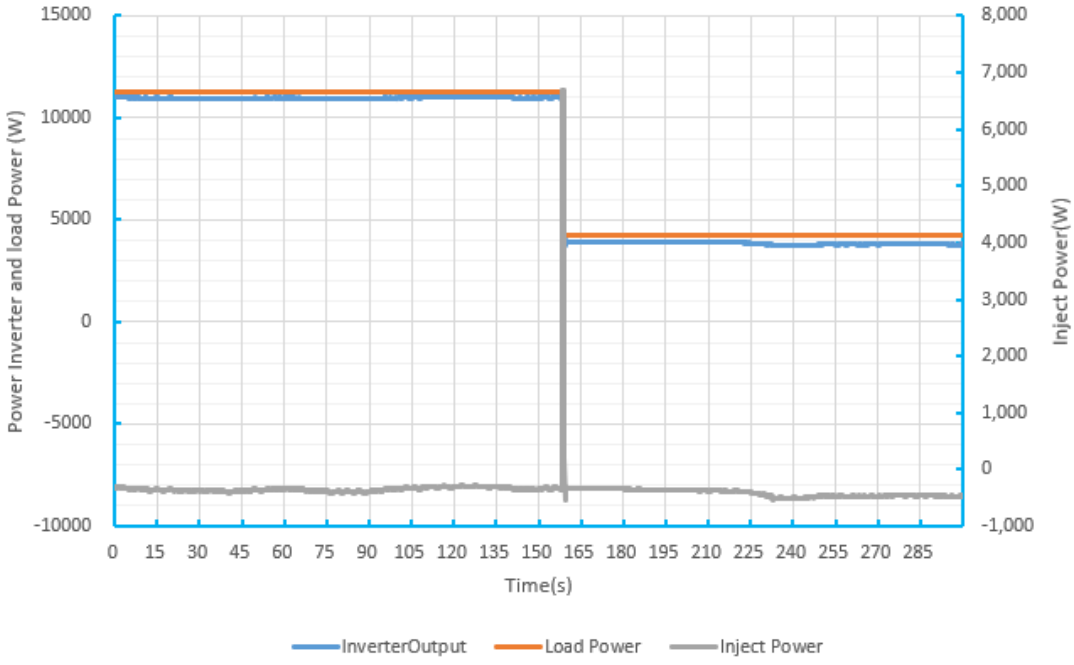
Overview



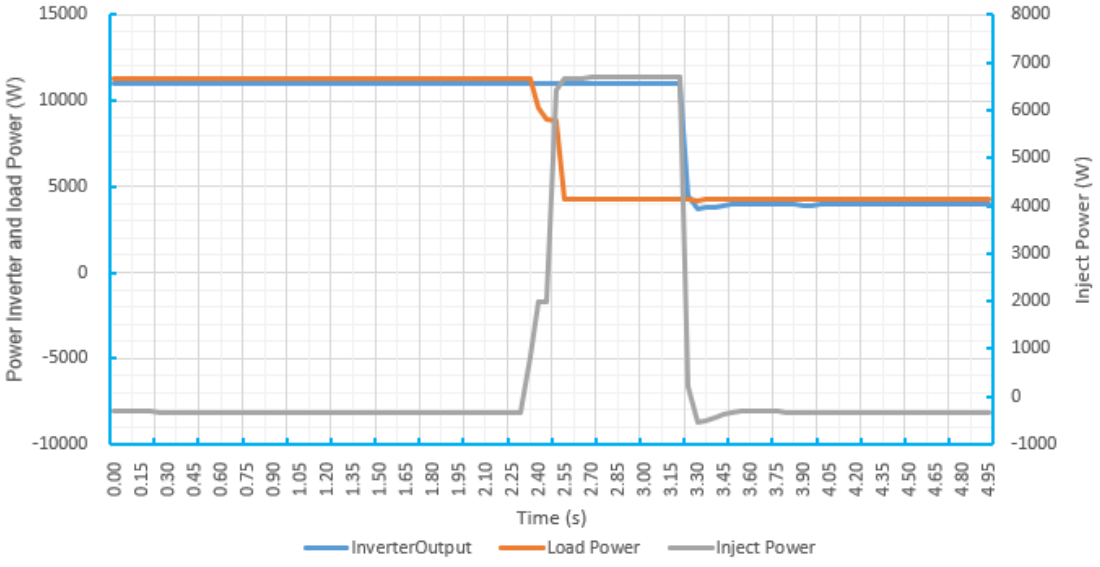
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 2



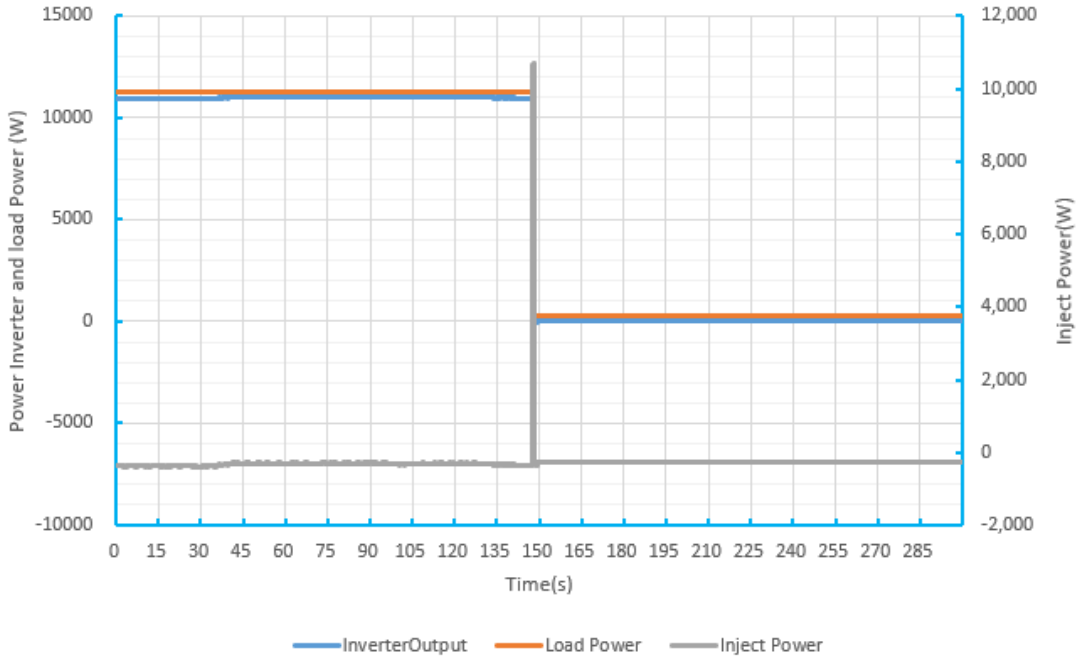
Overview



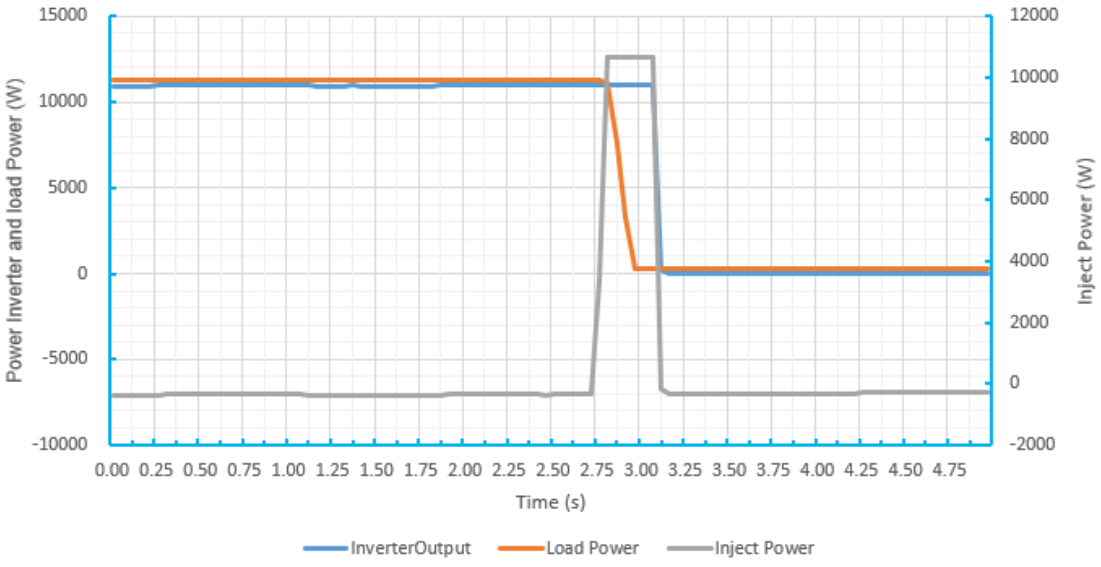
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 3



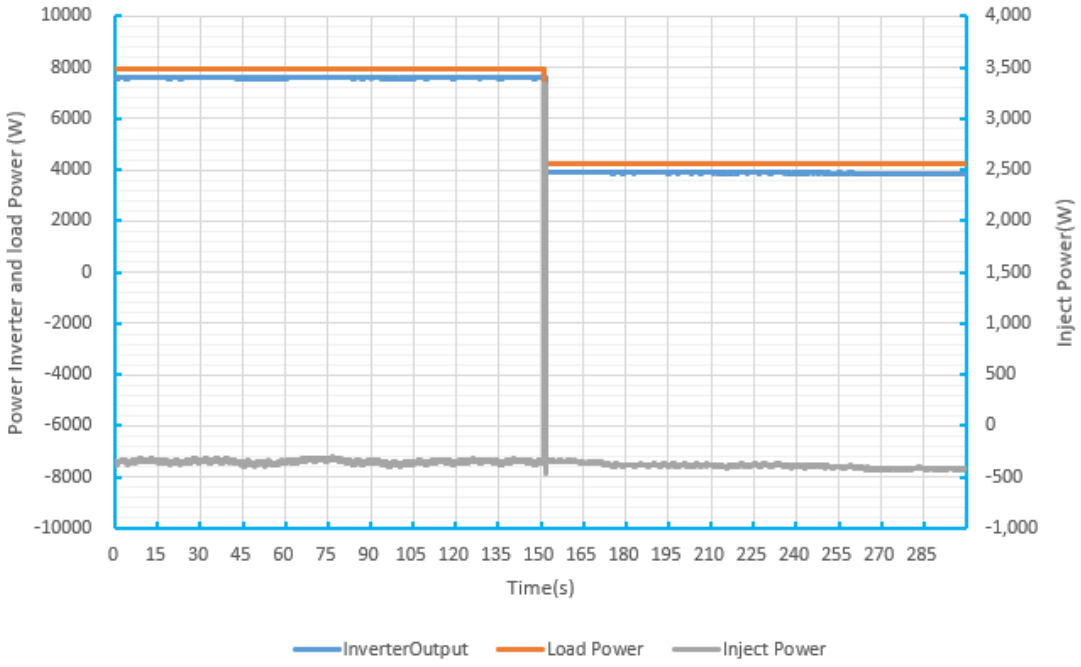
Overview



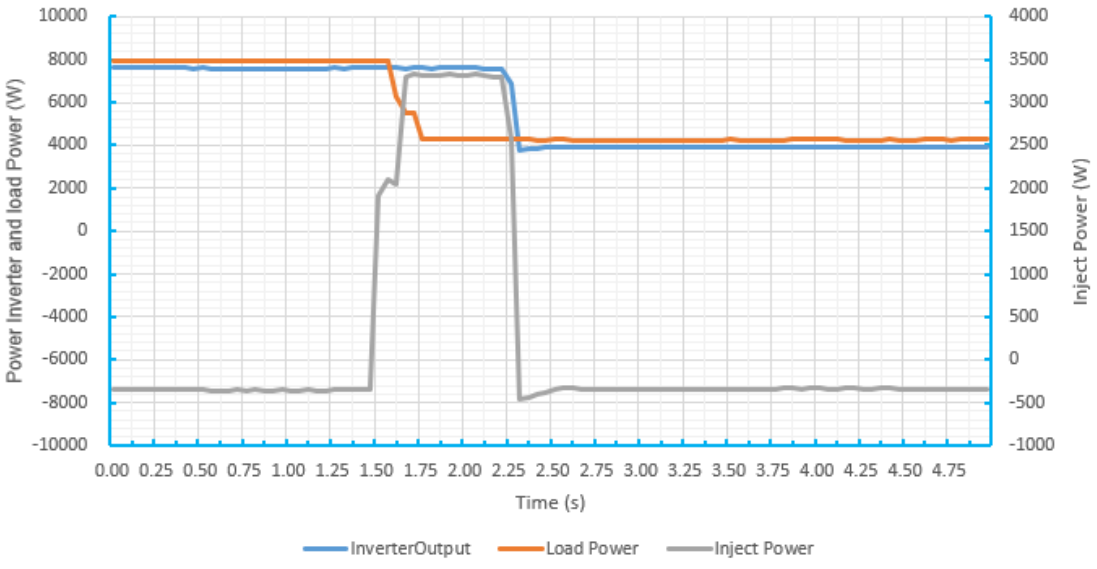
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 4



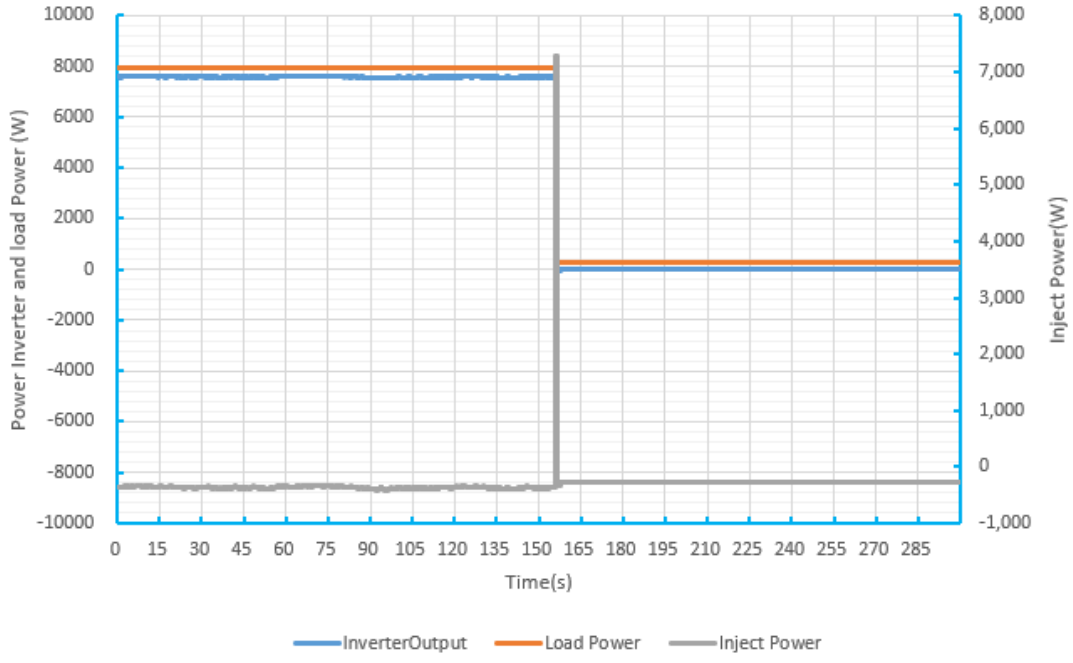
Overview



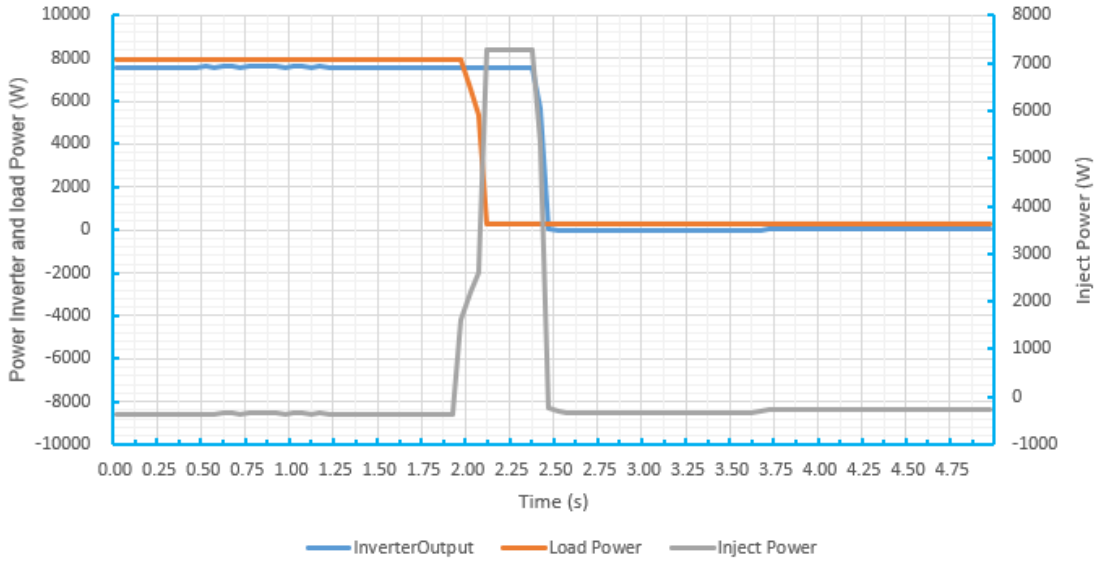
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 5



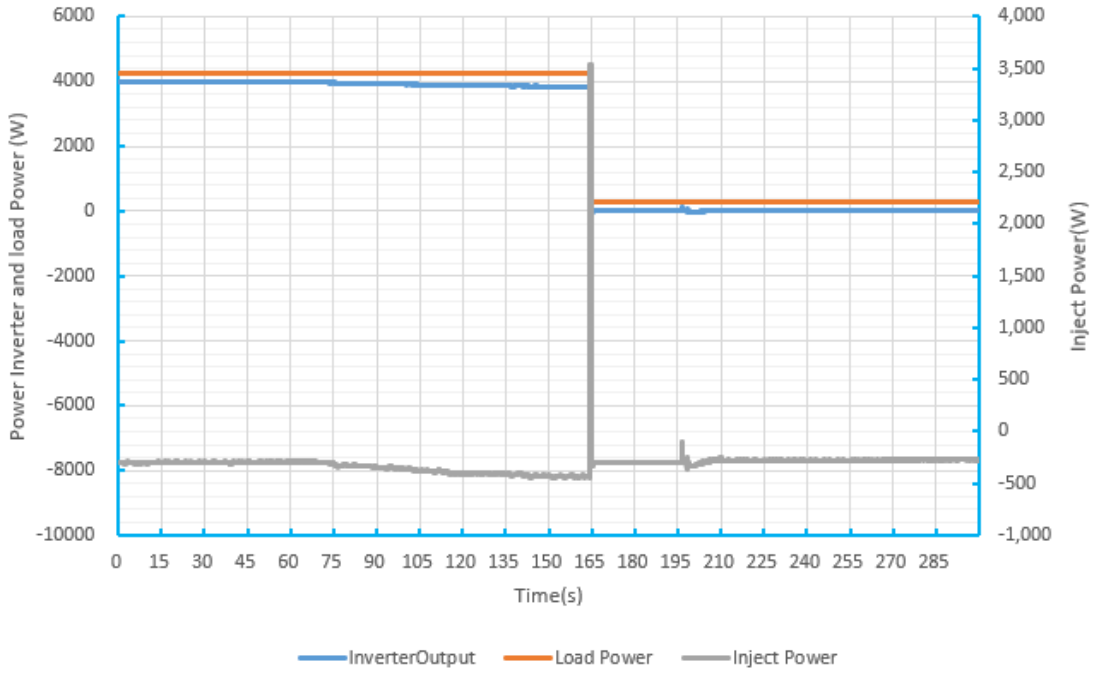
Overview



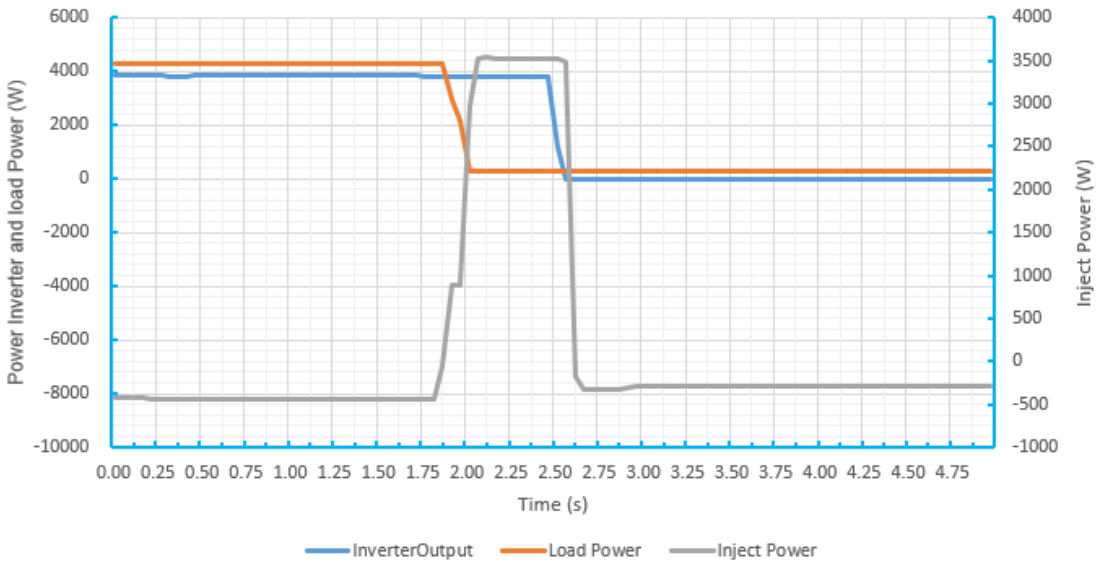
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph _Test 6



Overview



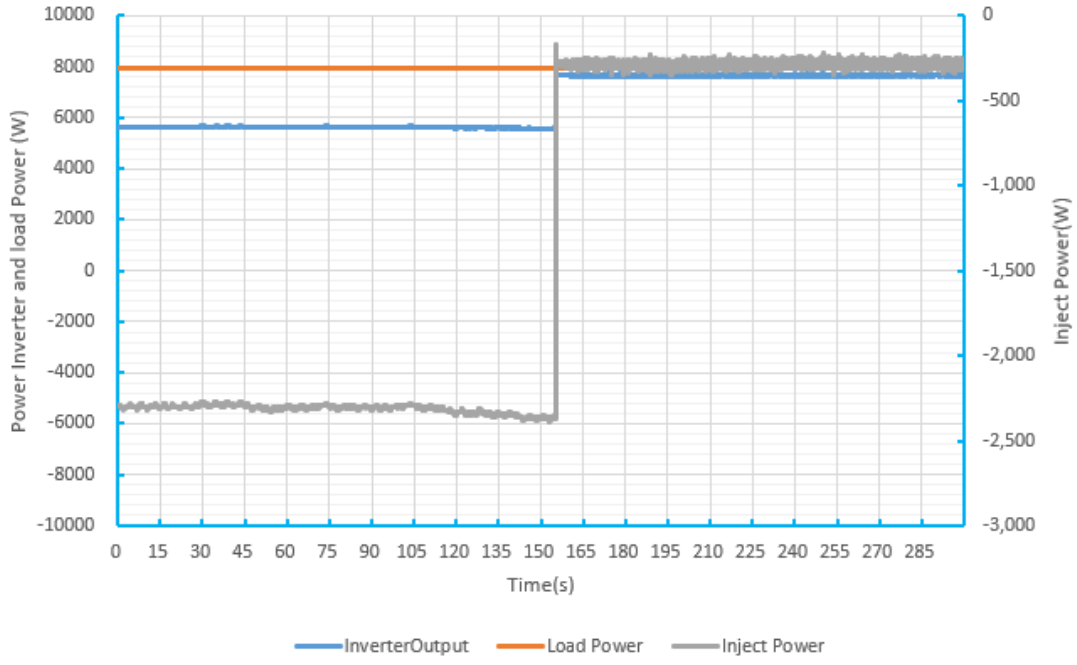
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

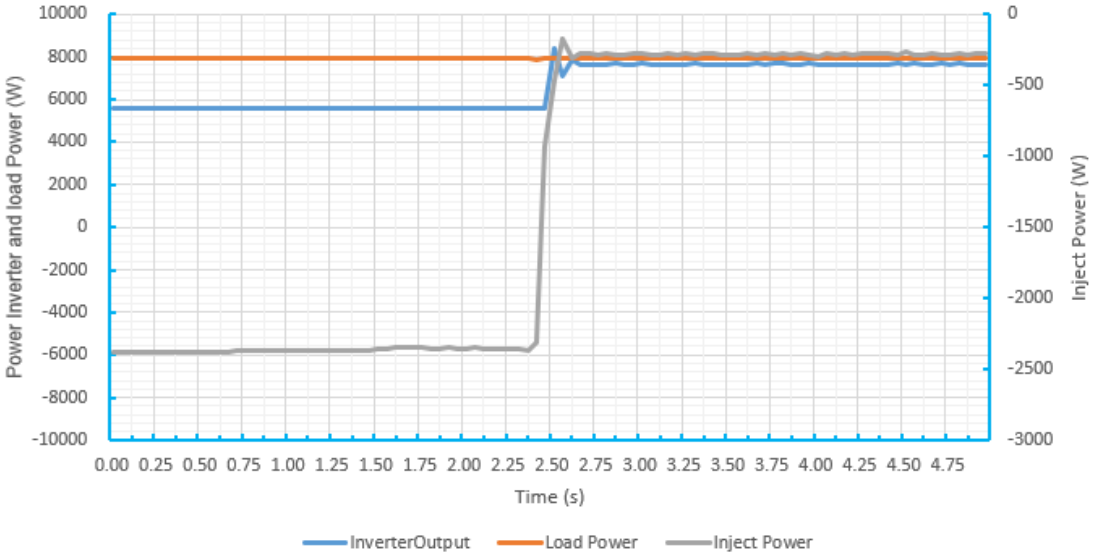
4.3	Response to power increases in the primary energy source				P
Step	Power of generator	load	re-adjust time <2s		
1	40-50%	60-70%	See graph 1 (0.24s)	See graph 2 (0.27s)	See graph 3 (0.83s)
2	>90%	60-70%			

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 1



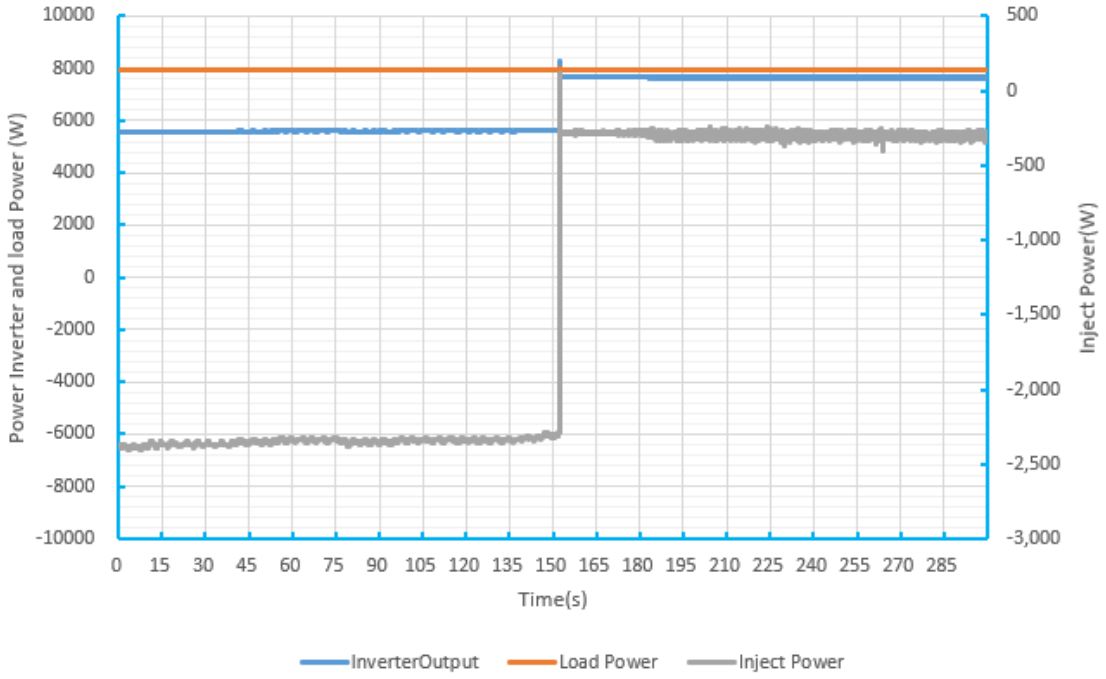
Overview



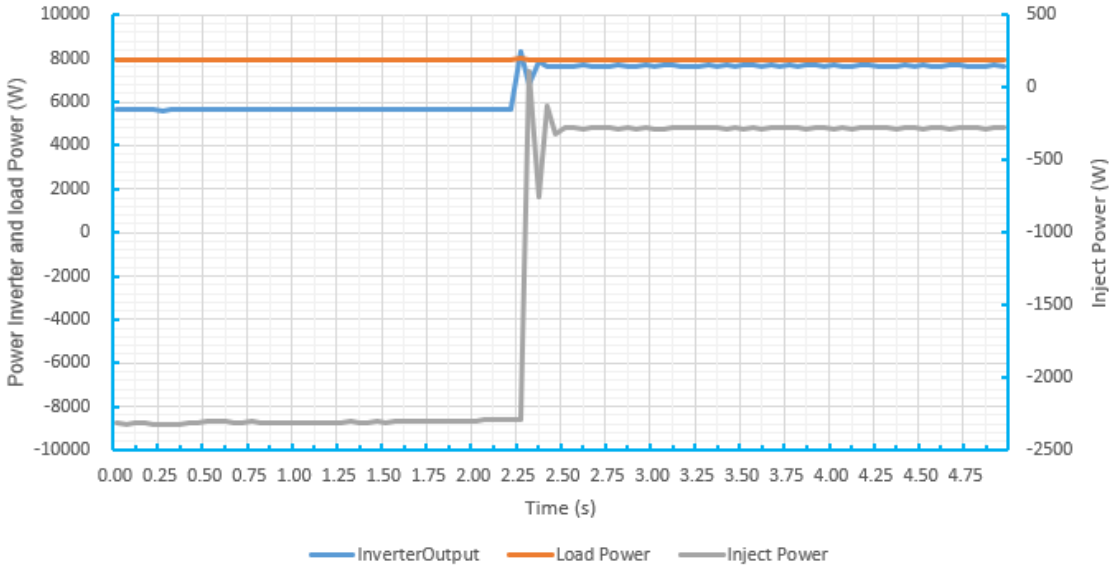
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 2



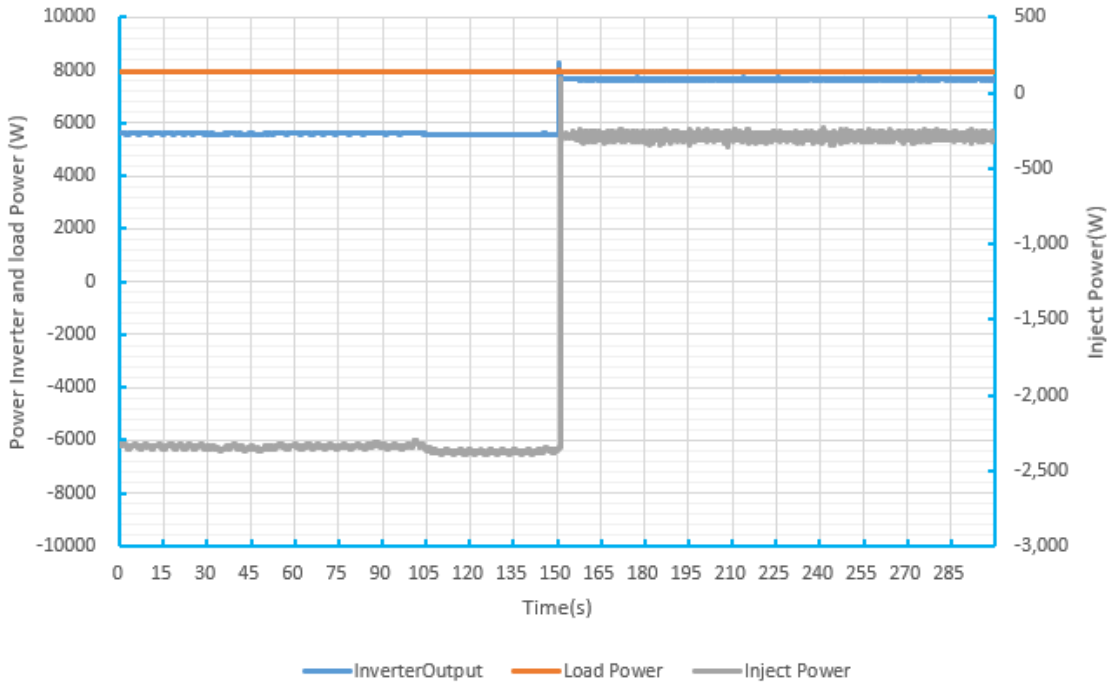
Overview



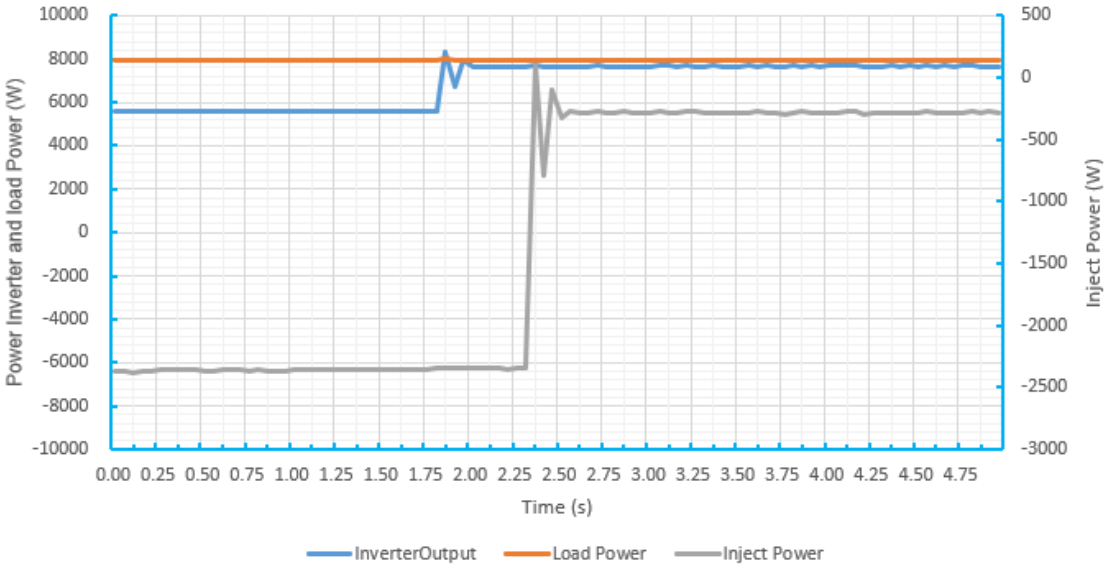
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 3



Overview



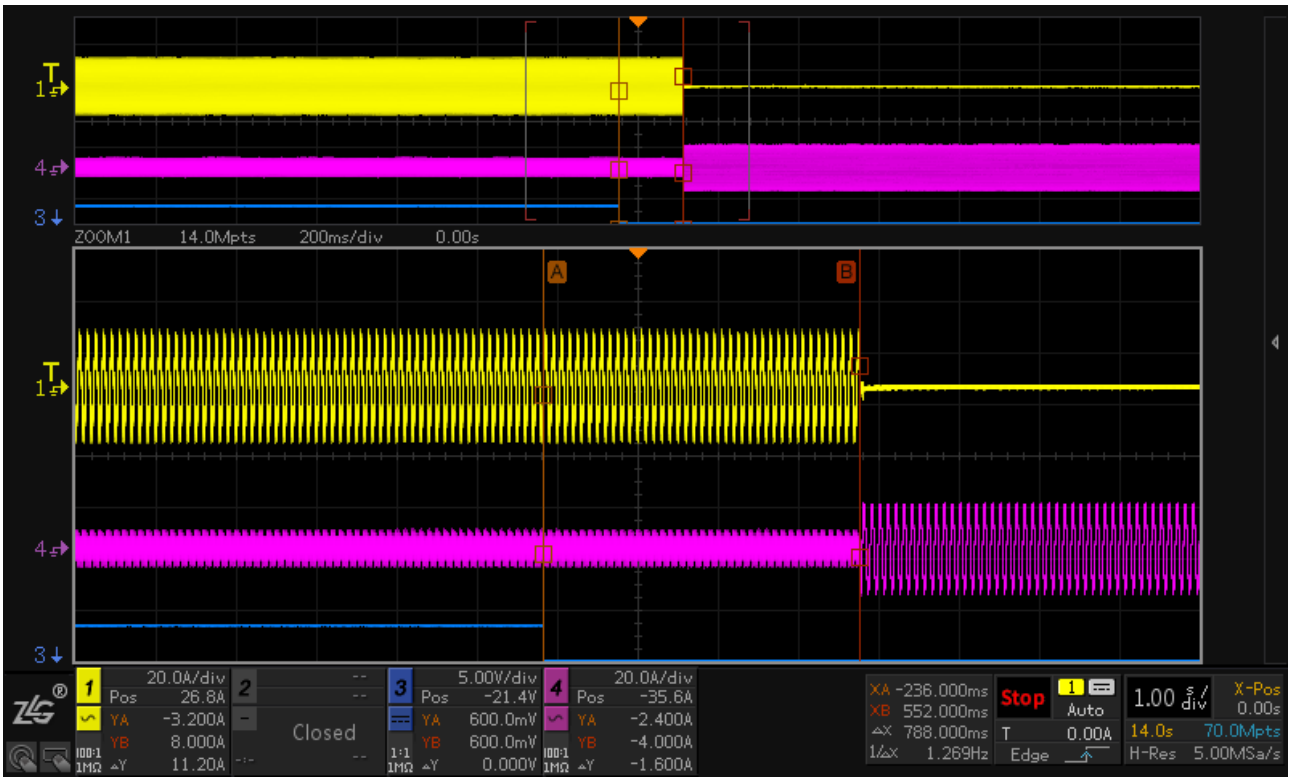
Zoom in

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

4.4	Action in case of loss of communications		P
Test No.	Power of generator	load	Cut off communication re-adjust time <2s
1	100%	60-70%	0.788
2	100%	60-70%	0.708
3	100%	60-70%	0.758

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

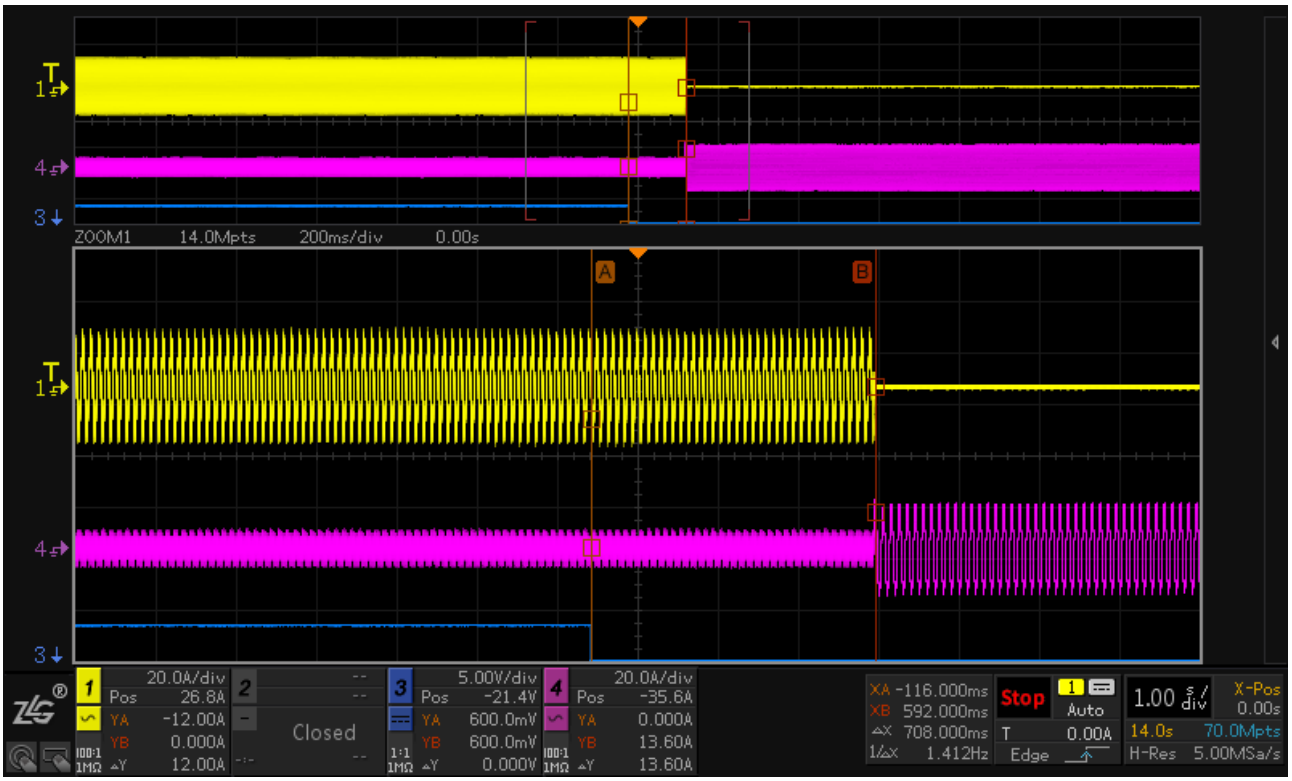
Test 1



C1 denotes current of Inverter , C2 denotes current of Grid, C3 denotes trip signal of communication.

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

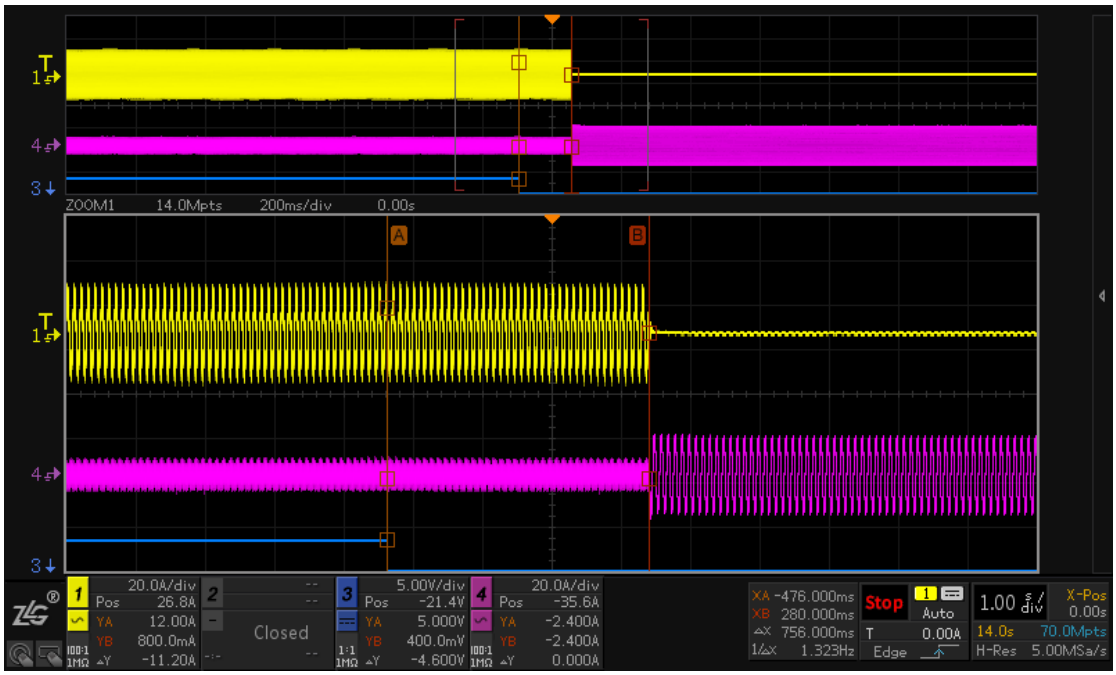
Test 2



C1 denotes current of Inverter , C2 denotes current of Grid, C3 denotes trip signal of communication.

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

Test 3



C1 denotes current of Inverter , C2 denotes current of Grid, C3 denotes trip signal of communication.

UNE 217001:2020 IN (REQUIREMENTS OF ANEXO I, ITC-BT-40(RD 244/2019))			
Clause	Requirement – Test	Result – Remark	Verdict

4.5	Determination of the maximum number of generators	P

4.1*	Permanent tolerance						P
	Test No.	Load			Power injection to the grid (W)	Tolerance (%)	Limit
	--	Phase R	Phase S	Phase T			
Single phase	1	90-100%	--	--	--	--	<-1%
	2	10-20%	--	--	--	--	<-1%
	3	0	--	--	--	--	<-1%
Three-phase	--	90-100%	90-100%	90-100%	-311.00	-1.24%	<-1%(-120W)
	--	10-20%	10-20%	10-20%	-348.42	-1.39%	
	--	0	0	0	-275.34	-1.10%	
	--	90-100%	60-70%	60-70%	-1557.73	-6.23%	
	--	60-70%	60-70%	60-70%	-324.26	-1.30%	
	--	30-40%	60-70%	60-70%	-2794.68	-11.18%	
	--	0	60-70%	60-70%	-5248.38	-20.99%	

Remark:

The sum of the tolerance of the power analyzer and current measured are 1%
Tested with energy meter DTSU666
*Two generators working in parallel

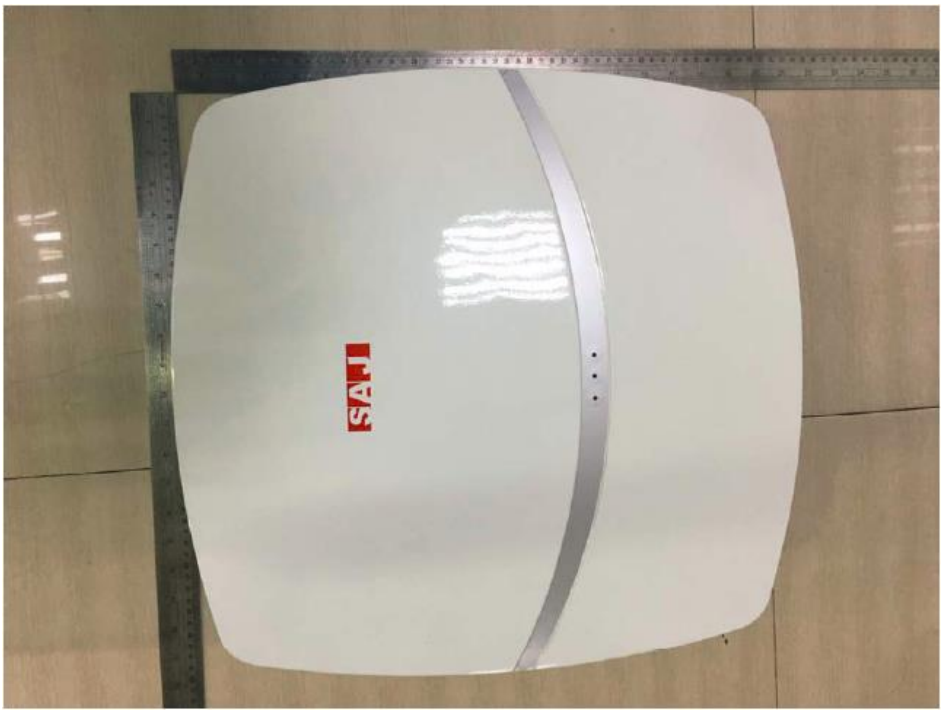
4.2*	Response to load disconnections	

Test No.	Initial Load	Final load	After disconnection re-adjust time <2s			Frequency [Hz]		
1	90-100%	60-70%	0.524	0.676	0.584	50.00	50.00	50.01
2	90-100%	30-40%	0.568	0.760	0.512	50.00	50.00	49.98
3	90-100%	0-5%	0.432	0.696	0.564	49.98	49.98	49.99
4	60-70%	30-40%	0.500	0.632	0.560	50.00	50.00	49.99
5	60-70%	0-5%	0.628	0.560	0.504	50.00	50.01	50.00
6	30-40%	0-5%	0.552	0.688	0.428	49.99	50.00	49.99

*Two generators working in parallel

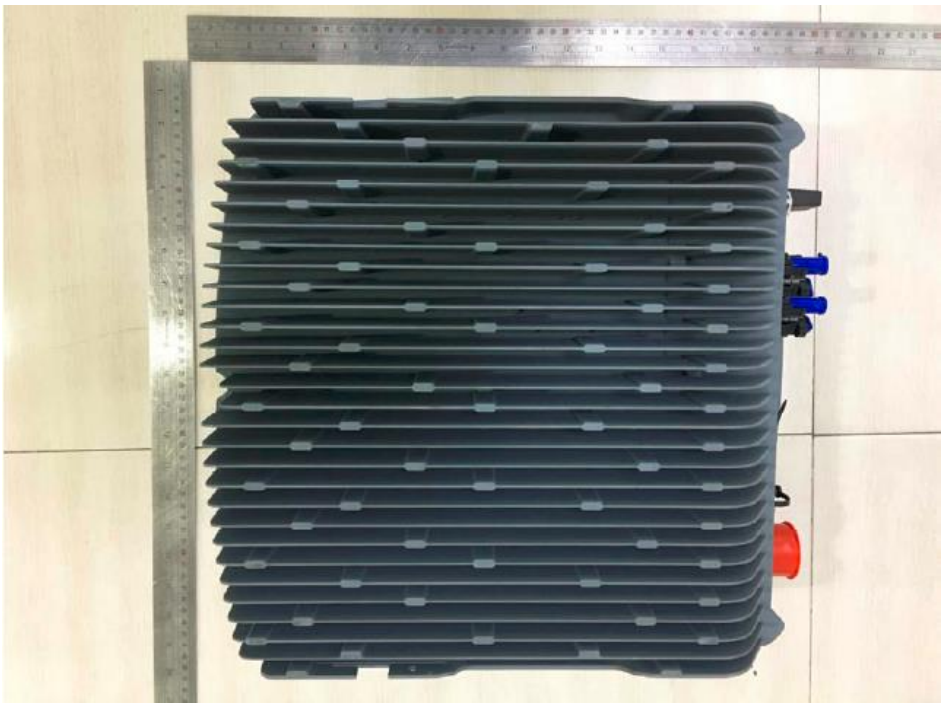
t_1(s)	tr(s)	ta(s)	N
0.878	0.118	2	10

Appendix: photos



Oversize view

Side view

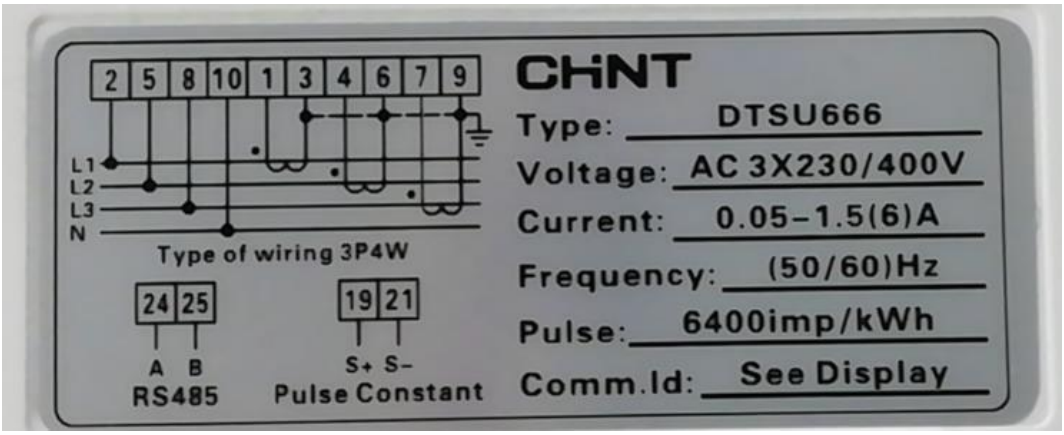


Bottom view

Connect view

Internal view

Meter view



Meter Label

(End of Report)

TEST REPORT
UNE 217001 IN: October 2015
Requirements and tests for systems intended to avoid the energy transmission to the distribution network

Report Reference No…… ...:	191115099GZU-001
Date of issue……..:	31 Dec 2019
Total number of pages……..:	30 pages

Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address.....	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Testing location/ address.....	Same as above
Tested by (name + signature)……:	Jason Fu Technical Team Leader
Approved by (+ signature)	Tommy Zhong Technical Manager

Applicant's name	Guangzhou Sanjing Electric Co., Ltd.
Address.....	No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China

Test specification:	
Standard	UNE 217001 IN: October 2015
Test procedure.....	Type approval
Non-standard test method……..:	N/A

Test Report Form No.	UNE 217001a
Test Report Form(s) Originator.....	Intertek Guangzhou
Master TRF.....	Dated 2019-11

Test item description	Anti-backflow system
Trade Mark	SAJ
Manufacturer.....	Same as Applicant
Model/Type reference	PV Grid-connected Inverter: R5-3K-T2，R5-4K-T2，R5-5K-T2，R5-6K-T2，R5-8K-T2，R5-9K-T2，R5-10K-T2，R5-12K-T2, R5-13K-T2,R5-15K-T2,R5-17K-T2,R5-20K-T2 Three phase smart meter: DTSU666

Ratings ..... PV Grid-connected Inverter:

Model	R5-3K-T2	R5-4K-T2	R5-5K-T2	R5-6K-T2	R5-8K-T2	R5-9K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc					
Max DC input Current [PV1/PV2]	12.5/12.5 Adc					
Max. Short circuit Current [PV1/PV2]	15/15Adc					
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	4.4	5.8	7.3	8.7	11.6	13.1
Max.AC Current [A]	5.0	6.7	8.4	10.0	13.4	15.0
Grid Frequency	50Hz					
Rated Power [W]	3000	4000	5000	6000	8000	9000
Max. AC power [VA]	3300	4400	5500	6600	8800	9900
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

Model	R5-10K-T2	R5-12K-T2	R5-13K-T2	R5-15K-T2	R5-17K-T2	R5-20K-T2
Max Voltage	1100 Vdc					
MPPT voltage range	160-950 Vdc				180-950 Vdc	

Max DC input Current	12.5/12.5 Adc		25/12.5 Adc		25/25 Adc	
Max. Short circuit Current	15/15 Adc		30/15 Adc		30/30 Adc	
Nominal AC voltage	3W/N/PE, 230/400Vac					
Rated AC current [A]	14.5	17.4	18.9	21.8	24.7	29.0
Max.AC Current [A]	16.7	18.2	21.7	25.0	28.4	33.4
Grid Frequency	50Hz					
Rated Power [W]	1000	12000	13000	15000	17000	20000
Max. AC power [VA]	11000	12000	14300	16500	18700	22000
Power factor	0.8 Leading to 0.8 Lagging					
Temperature	-40℃ - +60℃					
Protective Class	Class I					
Ingress protection	IP 65					
Software Version	V3.025					

Three phase smart meter:

Voltage: 3 x 230/400V

Current: Max.80A

Frequency: 50/60Hz

Measurement categories: II

Type of communication: RS485

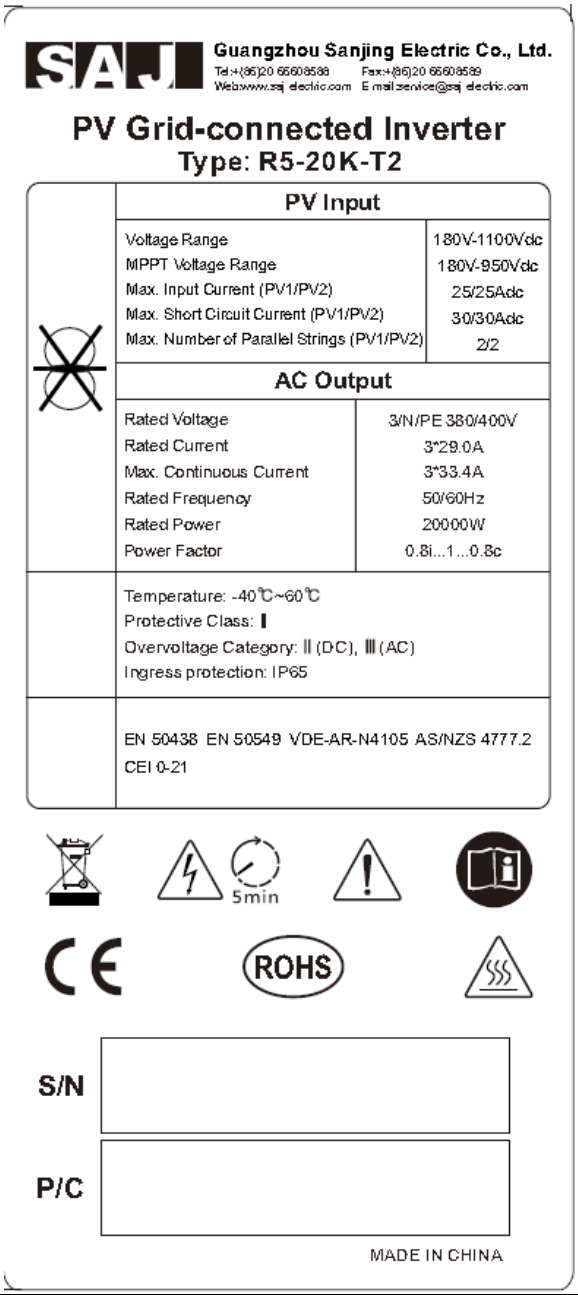
Operational temperature: -40℃ - +60℃

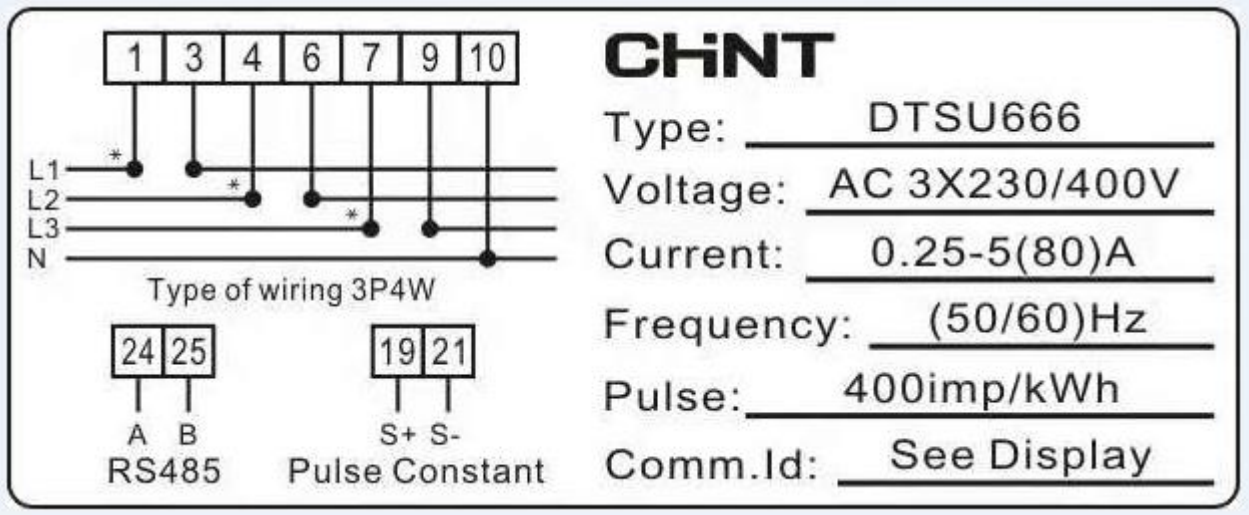
Ingress protection: IP 54
Overvoltage category: II
Pollution degree: 2
Software Version: communication: V1.011

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests The model R5-20K-T2 is type tested.	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

Copy of marking plate





Note:

1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. Label is attached on the side surface of enclosure and visible after installation
3. The other model labels are identical with label above, except the model name and rating.

Test item particulars.....:	
Temperature range .....:	-25℃ - 60℃
AC Overvoltage category.....:	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
DC Overvoltage category.....:	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV
IP protection class .....:	IP 65
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A (Not applicable)
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item.....:	15 Nov 2019
Date (s) of performance of tests.....:	15 Nov 2019 – 30 Dec 2019

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

When determining for test conclusion, measurement uncertainty of tests has been considered.
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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

Throughout this report a point is used as the decimal separator.

General product information:

Description of tested item:

The equipment is three phase transformerless utility-interactive type PV inverter which will be installed and directly connected to the grid network after installation.

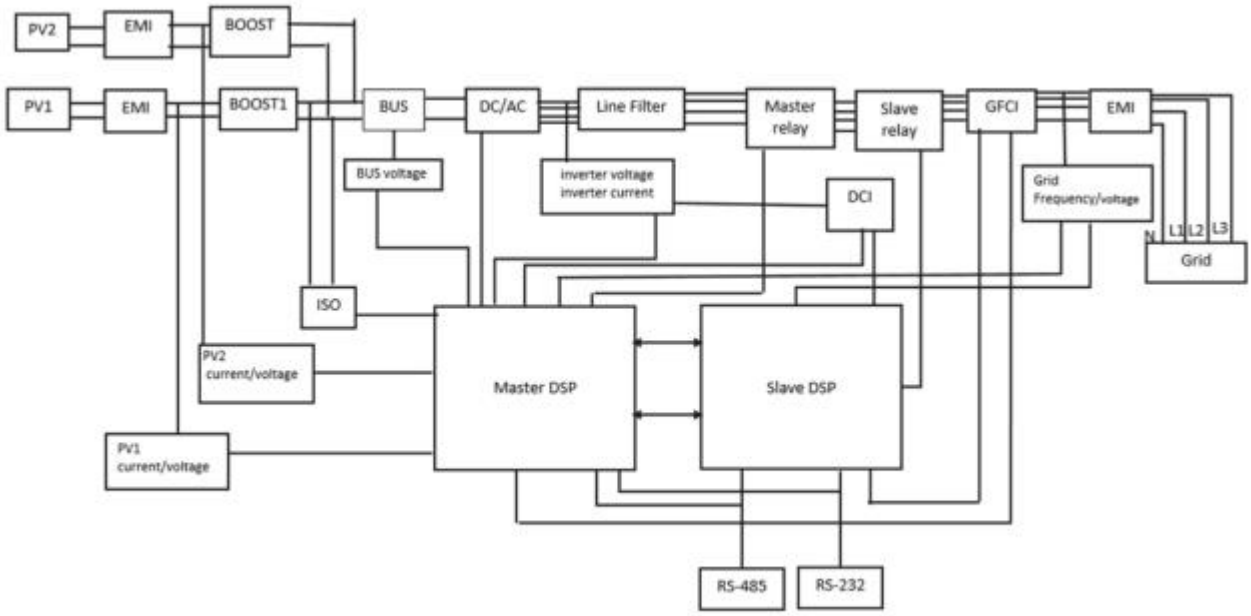
It contains filters for smoothing the output voltage and for EMC, switching and control circuits. Electronic circuits are mounted on a number of PCBs interconnected by appropriate connectors and wires. Power board including electronics components is mounted on the heat sink to earthing by metal screw and spring washer.

There are included a RS485 communication ports which are connected to the wattmeter to monitor the status of the inverter by proprietary software.

The PV input combiner with 2 string MPPT tracers and each MPPT tracer including one PV input terminals. AC output direct connected to grid and Protective Earthing are provided by dedicated earthing terminals. Grid is protected combination with a two series of relays as redundant build for ensure the inverter can independent disconnected from gird while a relay was fault.

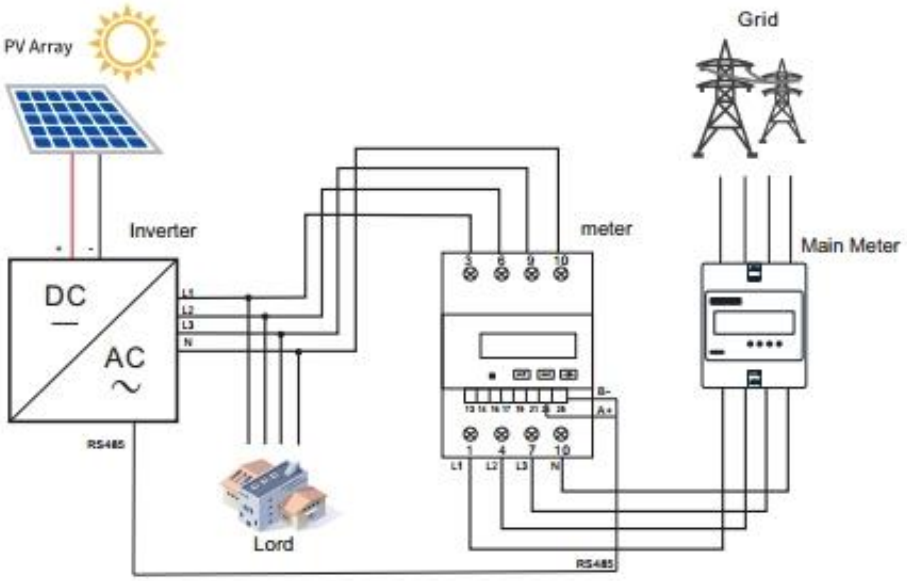
During fault condition defined in this standard, after the DSP receives the abnormal signal from the relevant protective detection circuit, the relays will operate to disconnect the PV inverter active lines from grid automatically.
The master DSP and slaver DSP has capacity independent disconnected from gird, when any grid fault had happened.

Block diagram:



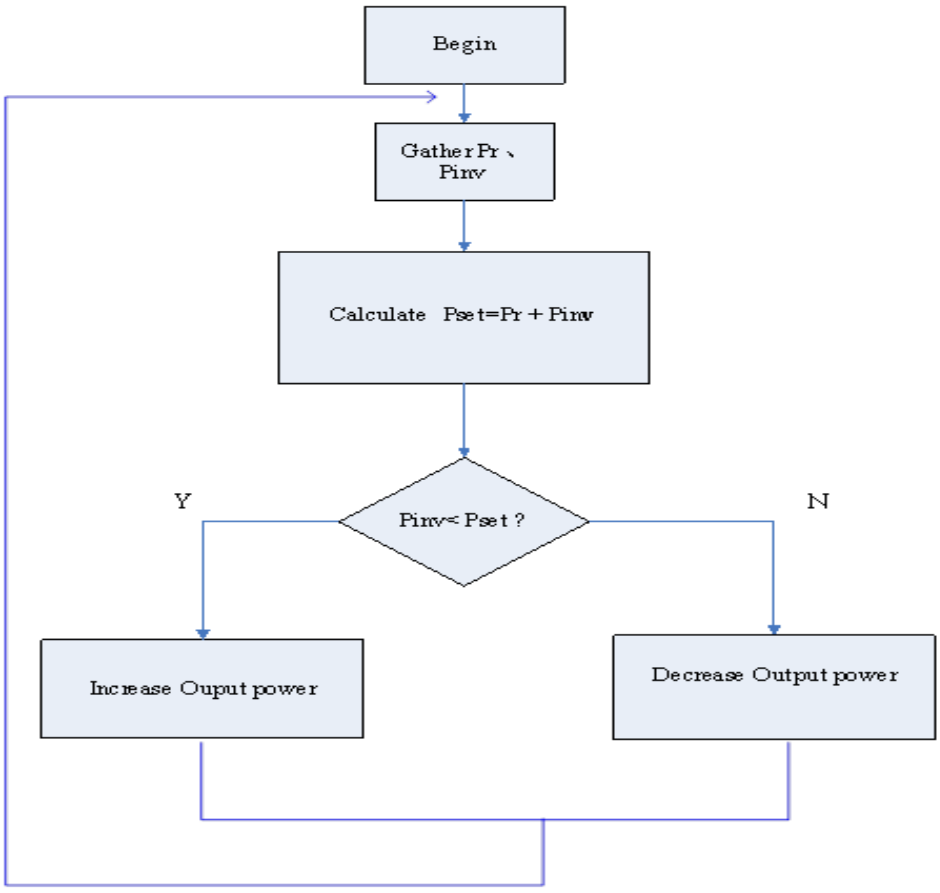
Block diagram

Basic outline of the system.



In the grid-connected power generation system, because the user load and light are constantly changing, in order to prevent the grid-connected system from generating electricity in the reverse direction to the power grid, the monitoring meter is added. The inverter communicates with the meter through the RS485 interface to collect the grid-connected port current in real time. And power signals, and calculate the maximum output power limit value of the inverter according to the meter's feedback power and current data, adjust the inverter output power to achieve the anti-backflow function, and maximize the use of photovoltaic modules to generate power;

Control algorithm:

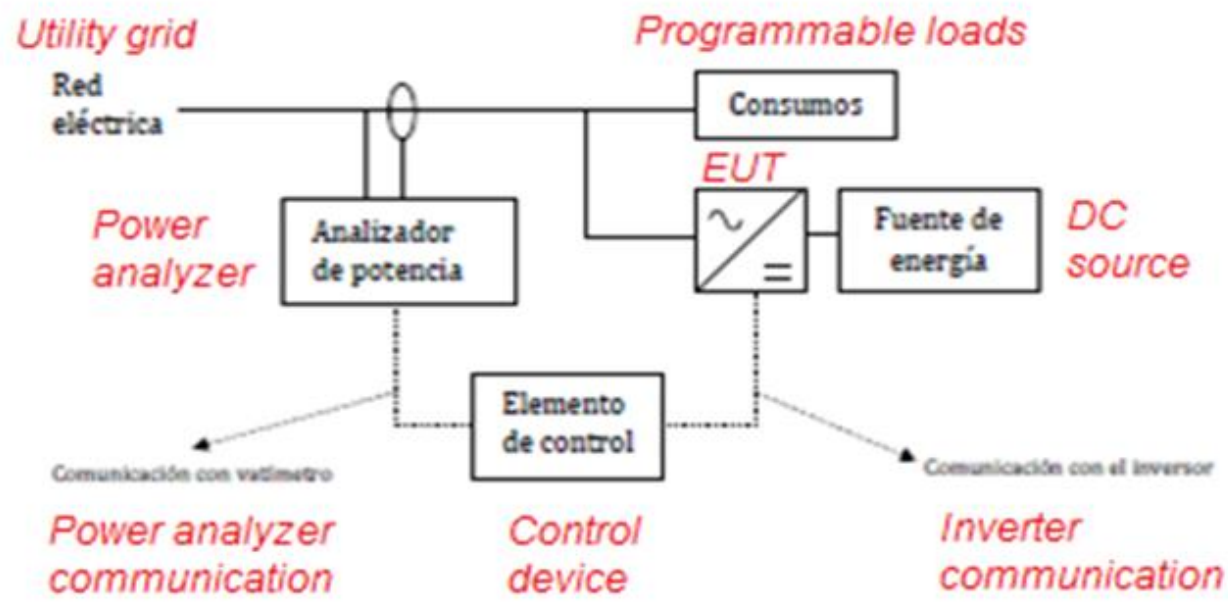


Variable	Statement
Pr	The power detected by the meter. Negative values represent reverse current, while positive values represent absorbed power from the grid.
Pset	Inverter power limit setting
Pinv	Inverter operating output power

Pset= Pinv + Pr； When the current output power of the inverter is greater than the load power, the inverter supplies power to the load and reverses the current to the grid. At this time, it is detected that Pr is negative, and the inverter limit power setting value is reduced;
When the current output power of the inverter is less than the load power, the load must also absorb power from the grid at this time. At this time, it is detected that Pr is a positive value, and the inverter limit power setting value is increased;

Model difference:
The models R5-3K-T2，R5-4K-T2，R5-5K-T2，R5-6K-T2，R5-8K-T2，R5-9K-T2，R5-10K-T2，R5-12K-T2, R5-13K-T2,R5-15K-T2,R5-17K-T2,R5-20K-T2 are identical, which have same control algorithm, same topology diagram and hardware, only the power derating in software.

Test of setup:



UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict
4	**Requirements**		P
4.1	Measurement of energy exchange with the network		P
4.2	Measure of consumption		P
5	**Essays**		P
5.1	Tolerance in permanent regimes		P
5.2	Response to load disconnections		P
5.3	Response to power increases in the primary energy source		P
5.4	Action in case of loss of communications		P
5.5	Determination of the maximum number of generators	The inverter does not support interconnection. Only an inverter and wattmeter are connected directly to Grid	N/A

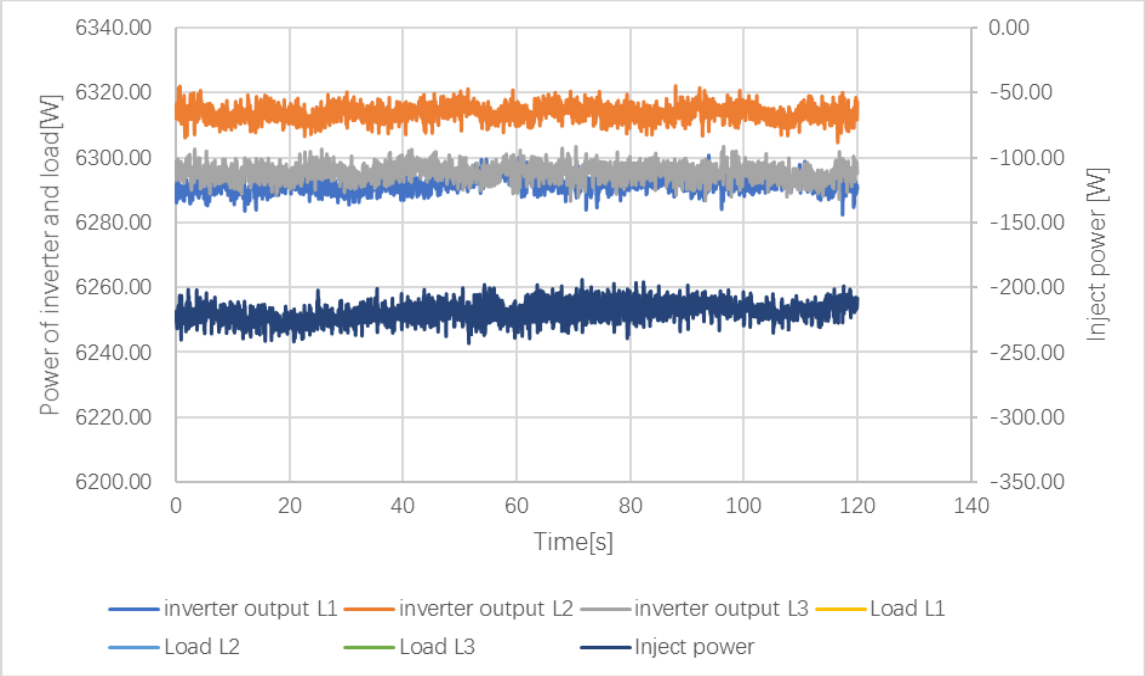
UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

5.1	Tolerance in permanent regimes					P
	Load			Power injection to the grid (W)	Tolerance (%)	Limit
	L1	L2	L3			
Single phase	95%	--	--	--	--	<4%
	15%	--	--	--	--	<4%
	0	--	--	--	--	<4%
Three-phase	95%	95%	95%	-219.02	-1.10	<4%
	15%	15%	15%	-66.59	-0.33	<4%
	0	0	0	-72.90	-0.36	<4%
	95%	65%	65%	-2016.70	-10.08	<4%
	65%	65%	65%	-122.11	-0.61	<4%
	35%	65%	65%	-4035.78	-20.18	<4%
	0	65%	65%	-8788.88	-43.94	<4%

Remark:

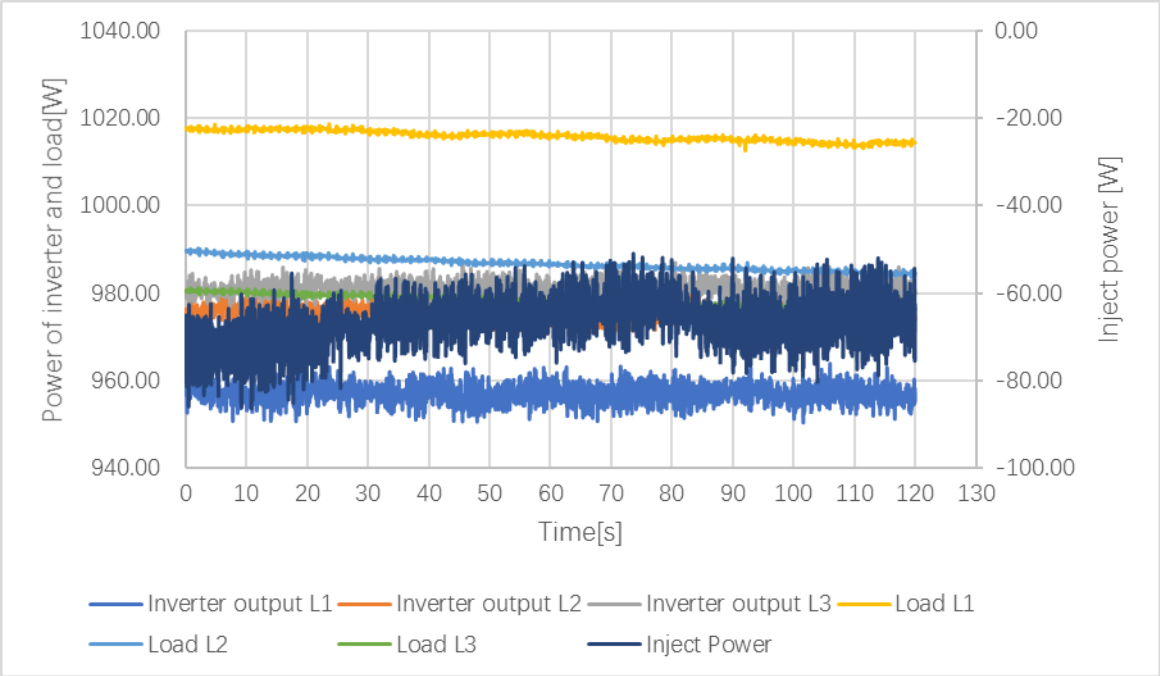
The sum of the tolerance of the power analyzer and current measured are 4%

Graph_ （95%, 95%, 95%）load

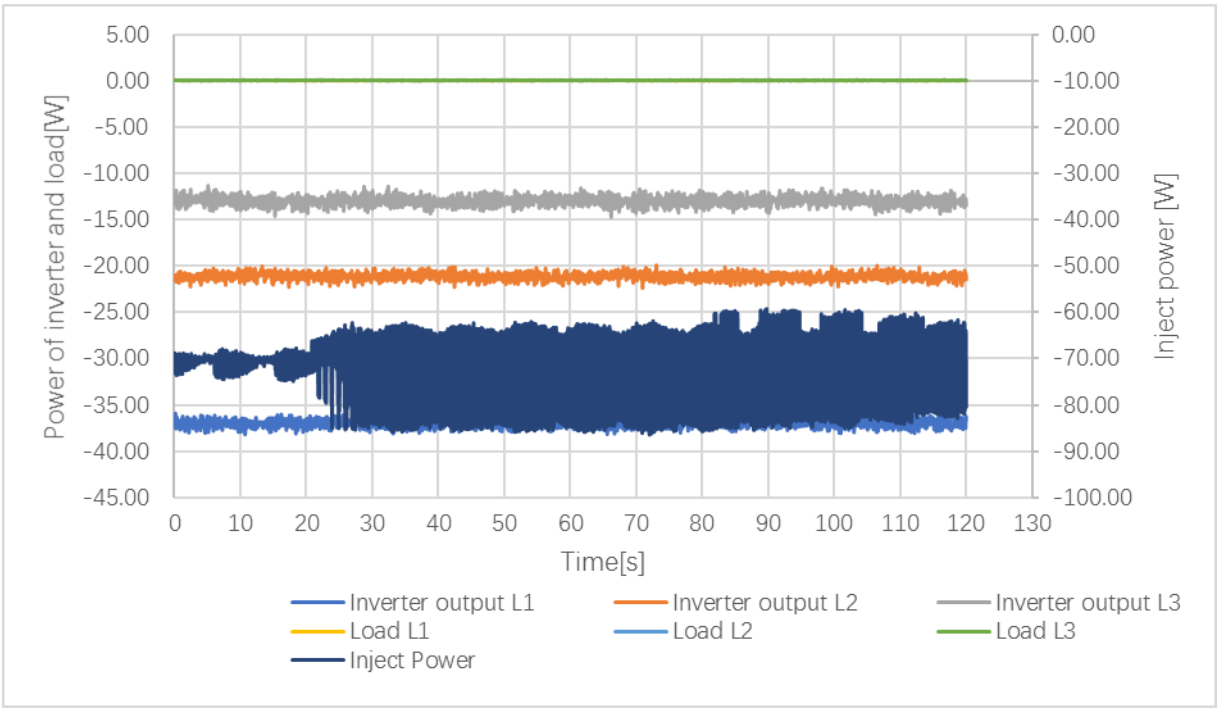


UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_（15%, 15%, 15%）load

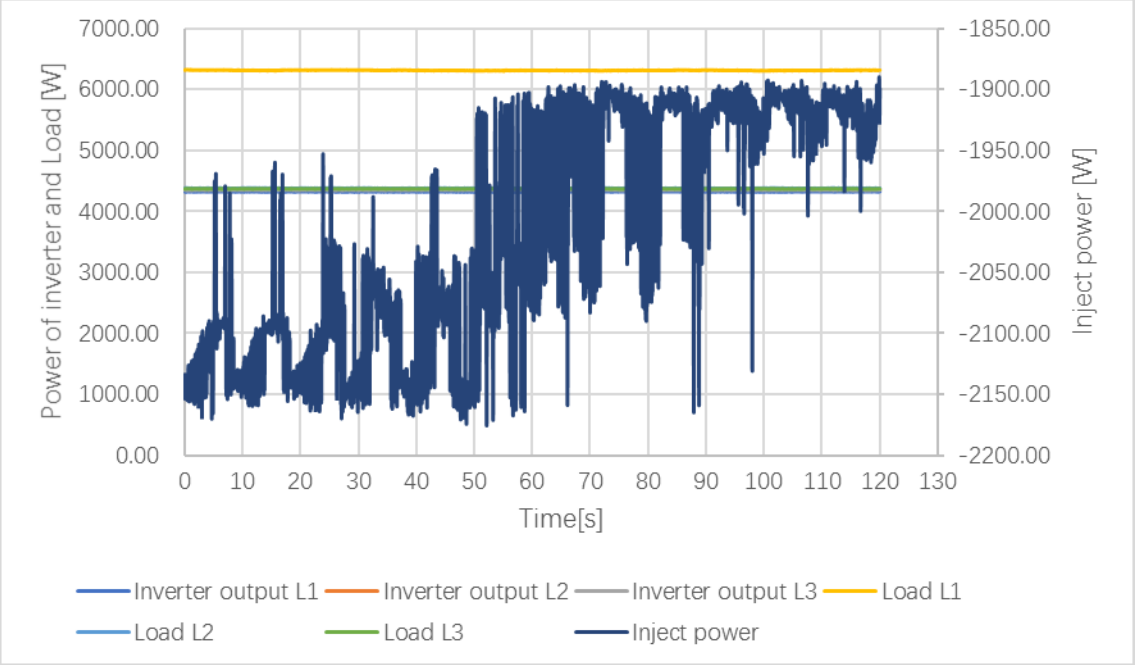


Graph_（0%, 0%, 0%）load

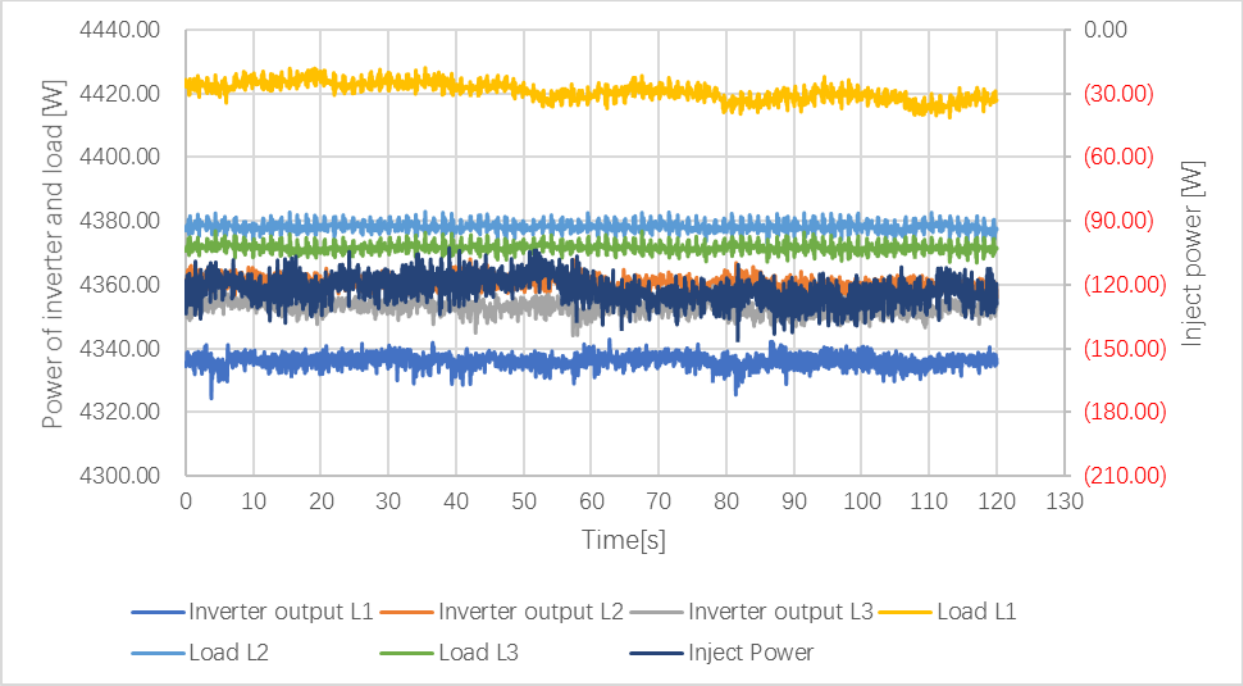


UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_（95%, 65%, 65%）load

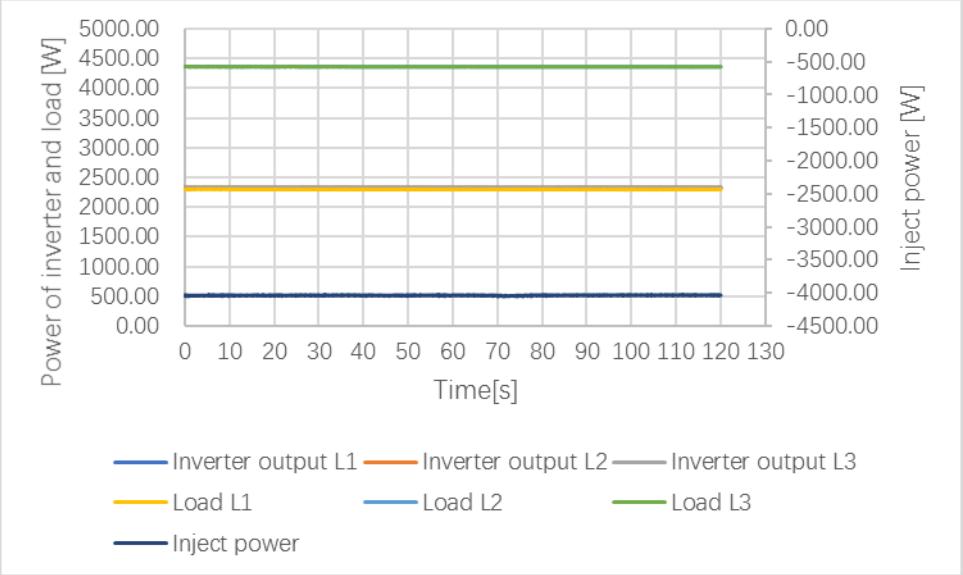


Graph_（65%, 65%, 65%）load



UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph_（35%, 65%, 65%）load

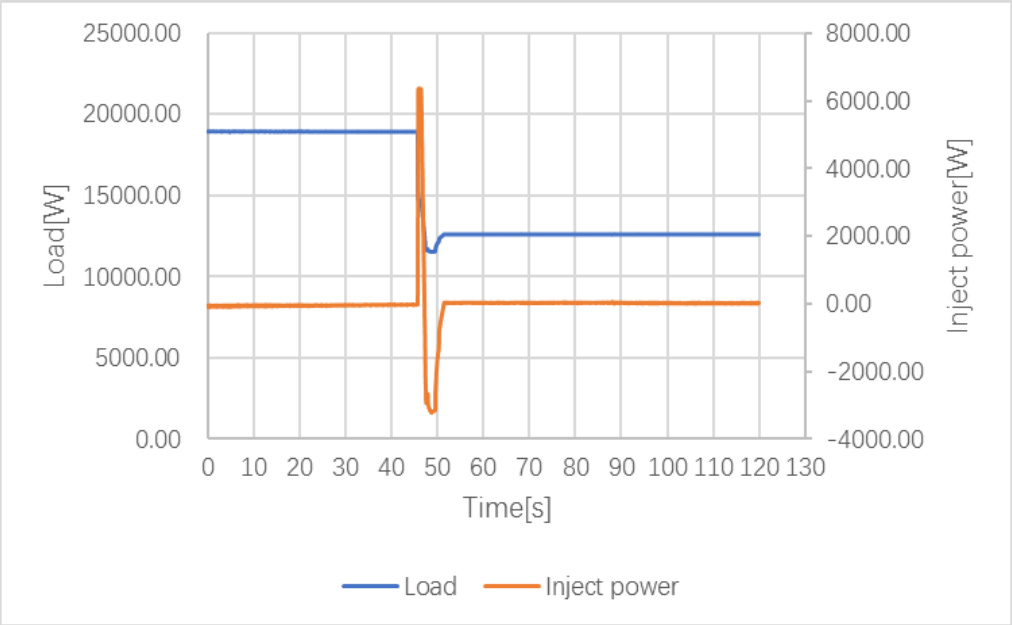


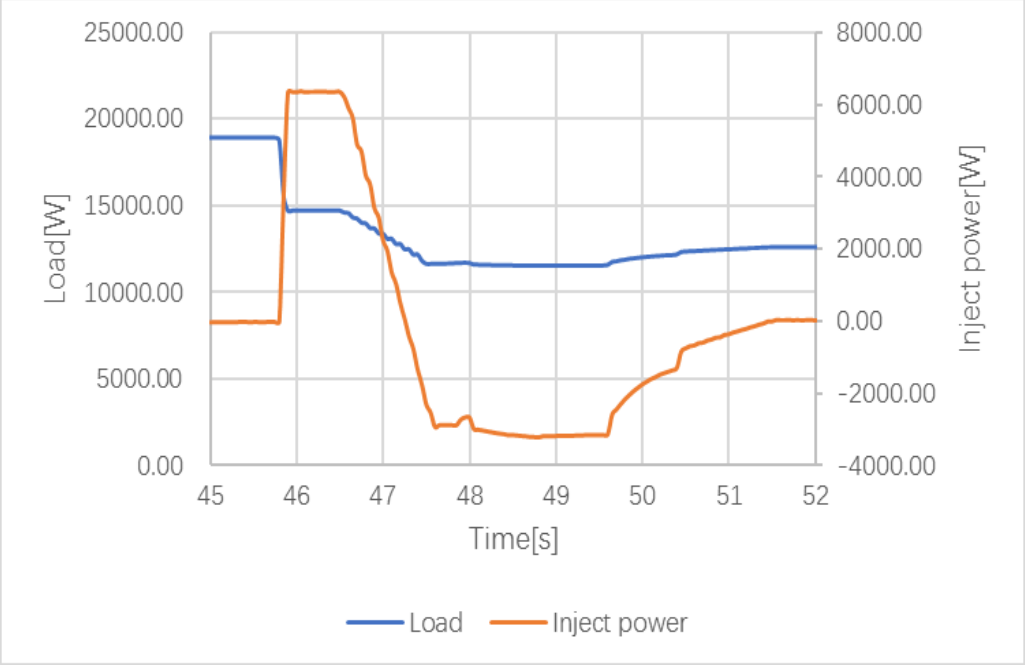
UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

5.2	Response to load disconnections							P
Step	Initial Load	Final load	After disconnection re-adjust time <2s			Frequency [Hz]		
1	95%	65%	1.40s	1.45s	1.30s	50.01	50.01	50.01
2	95%	35%	1.40s	1.35s	1.15s	50.01	50.01	50.01
3	95%	0%	0.50s	0.80s	0.85s	50.01	49.97	50.07
4	65%	35%	0.95s	1.00s	1.20s	50.02	50.01	50.01
5	65%	0%	0.60s	0.70s	0.90s	50.01	50.06	50.05
6	35%	0%	0.55	0.70s	0.45s	50.08	50.01	50.01

UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

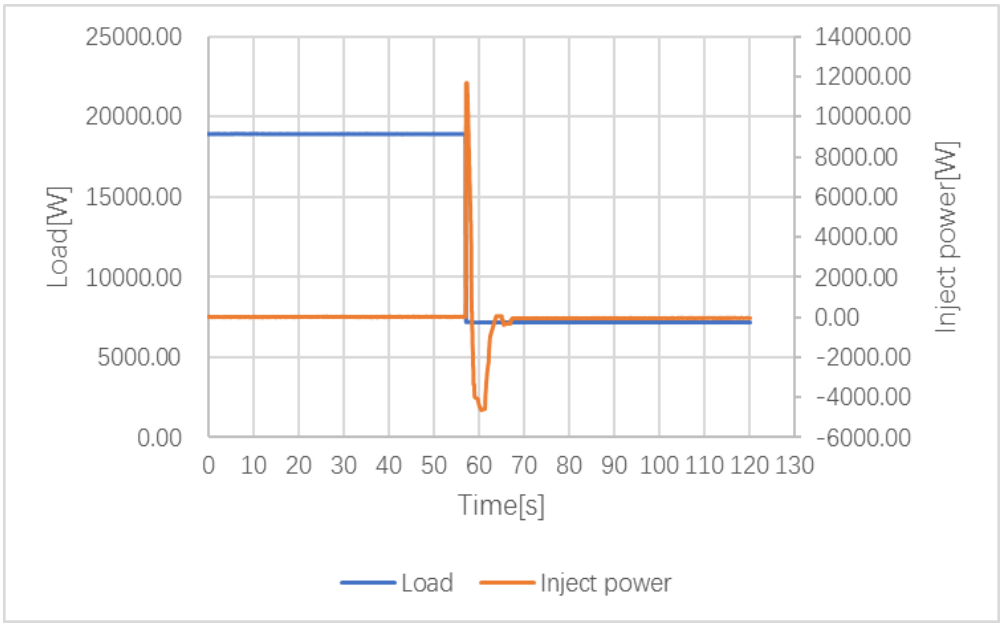
Graph 1_95% to 65%

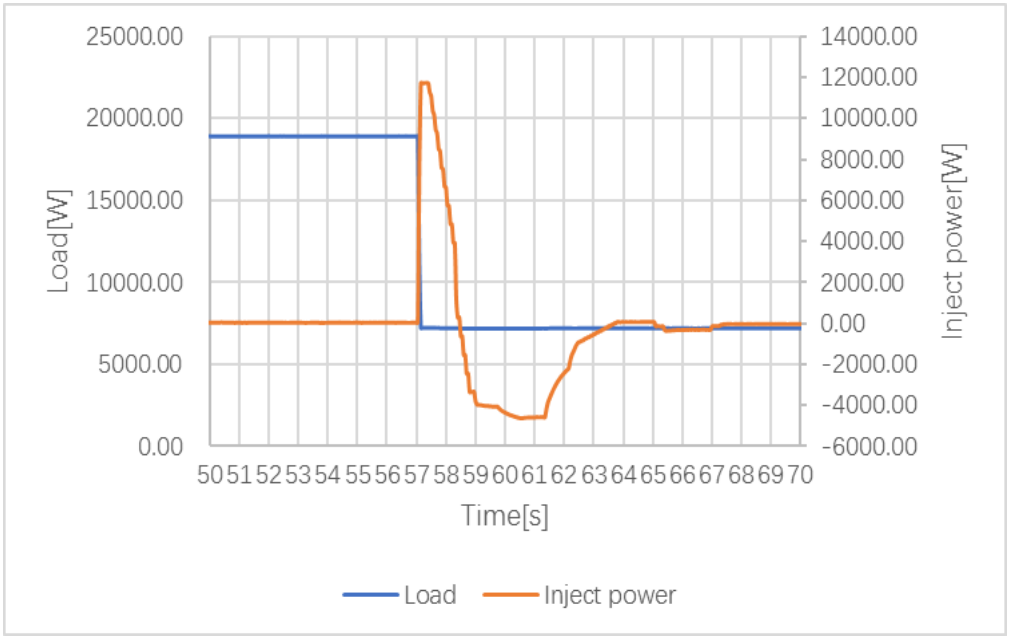




UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 2_95% to 35%





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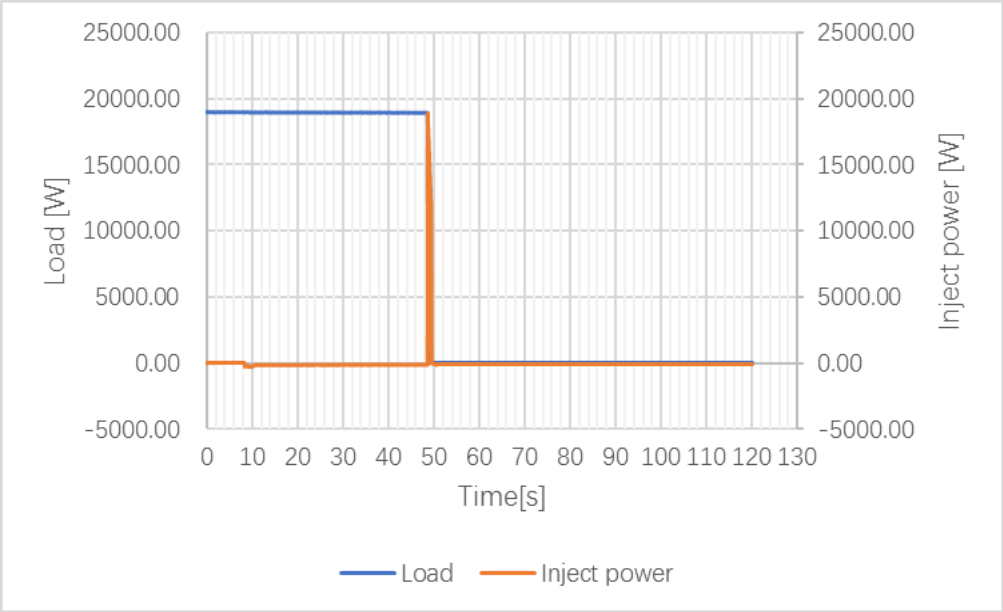
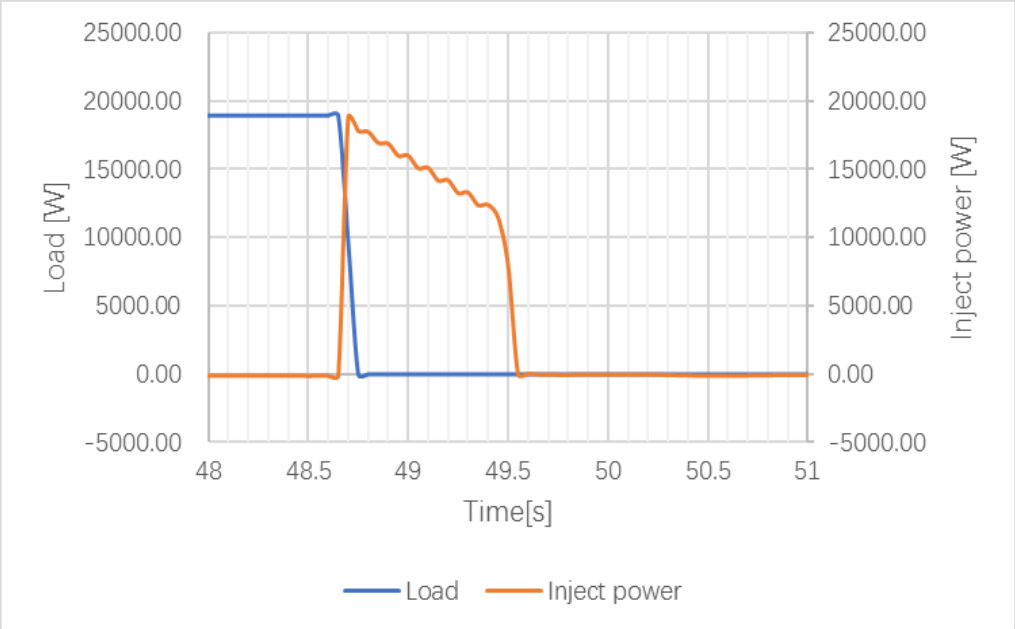
Clause	Requirement – Test	Result – Remark	Verdict

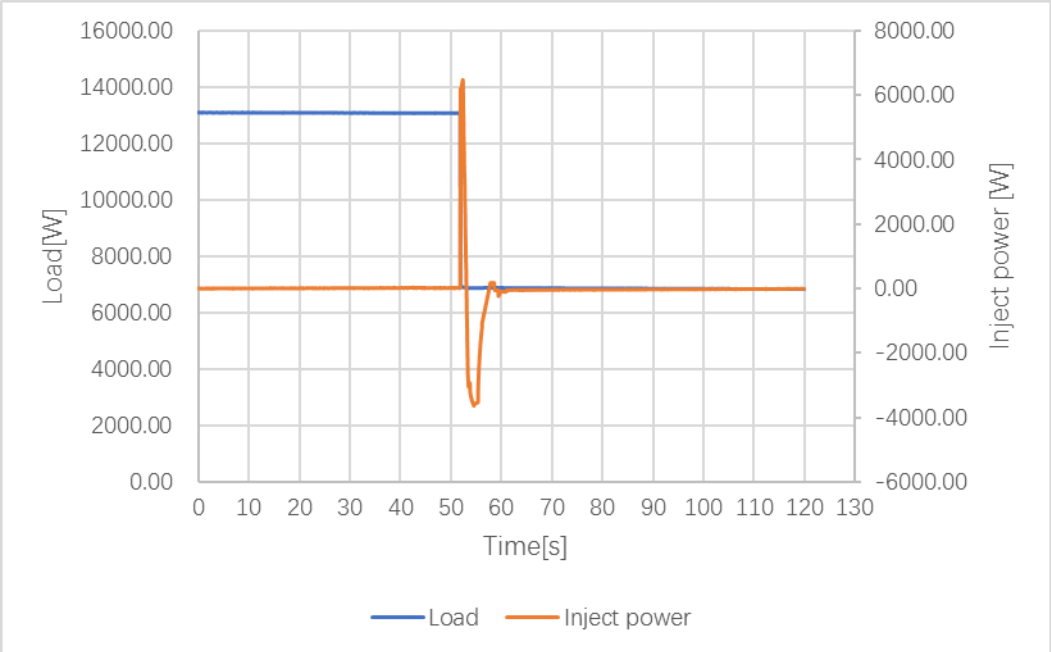
Graph 3_95% to 0%

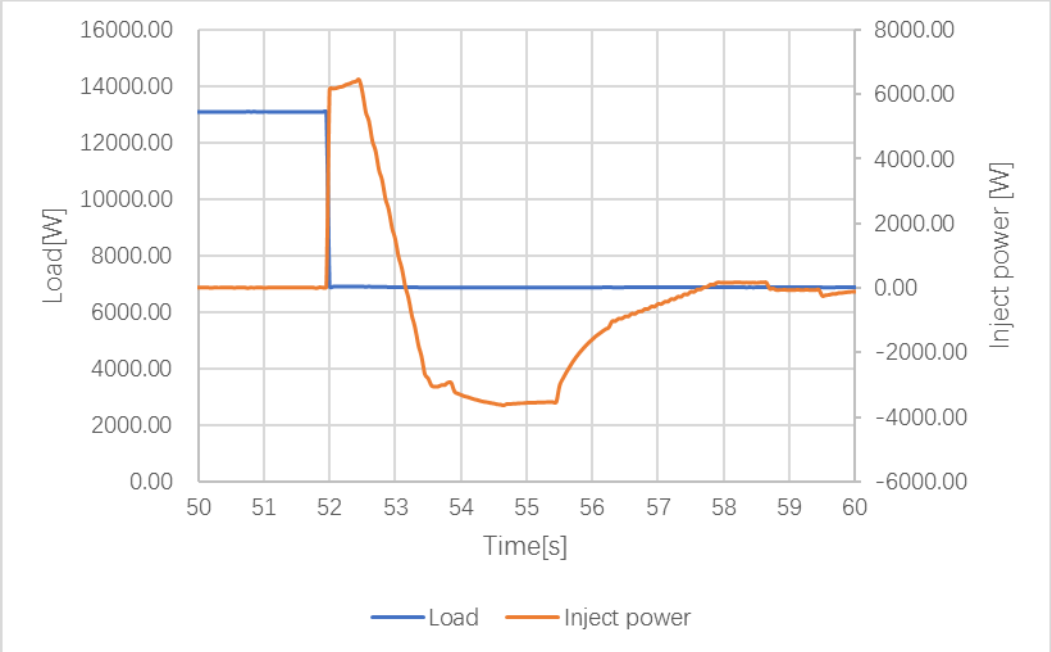




UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

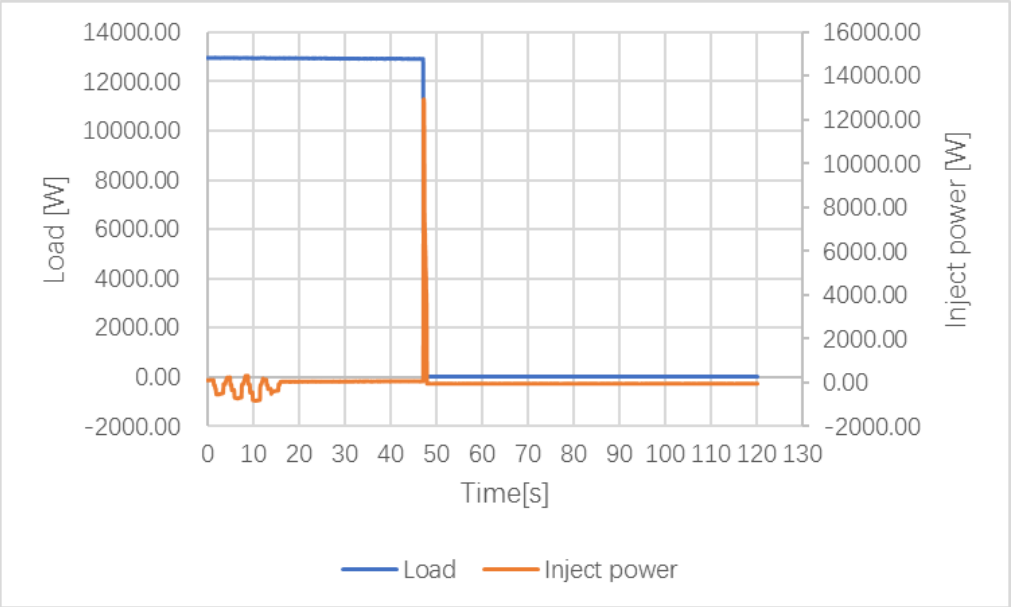
Graph 4_65% to 35%

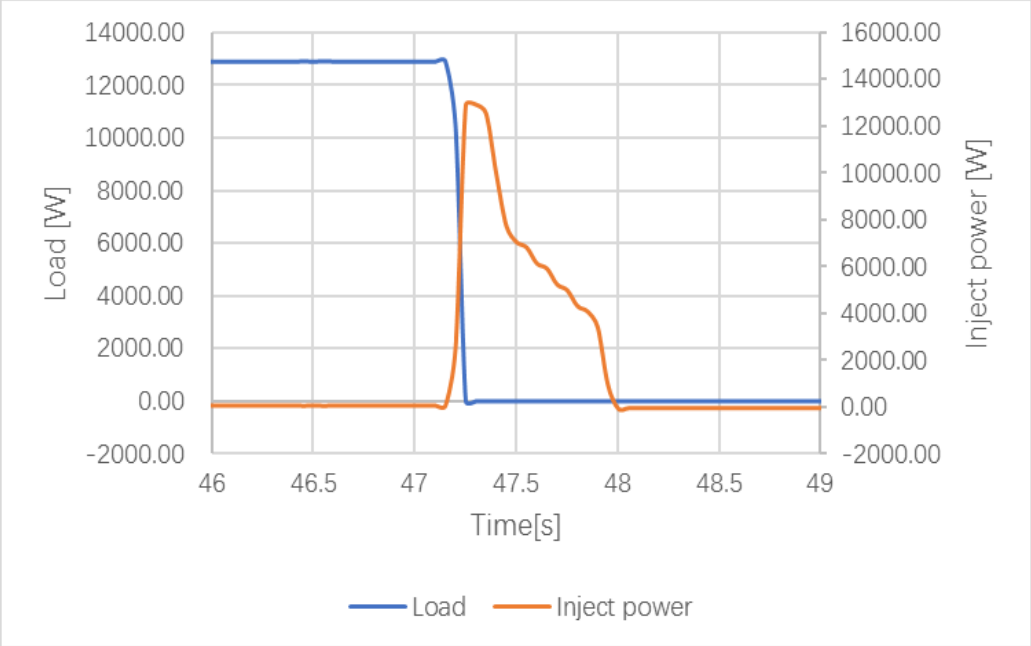




UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 5_65% to 0%





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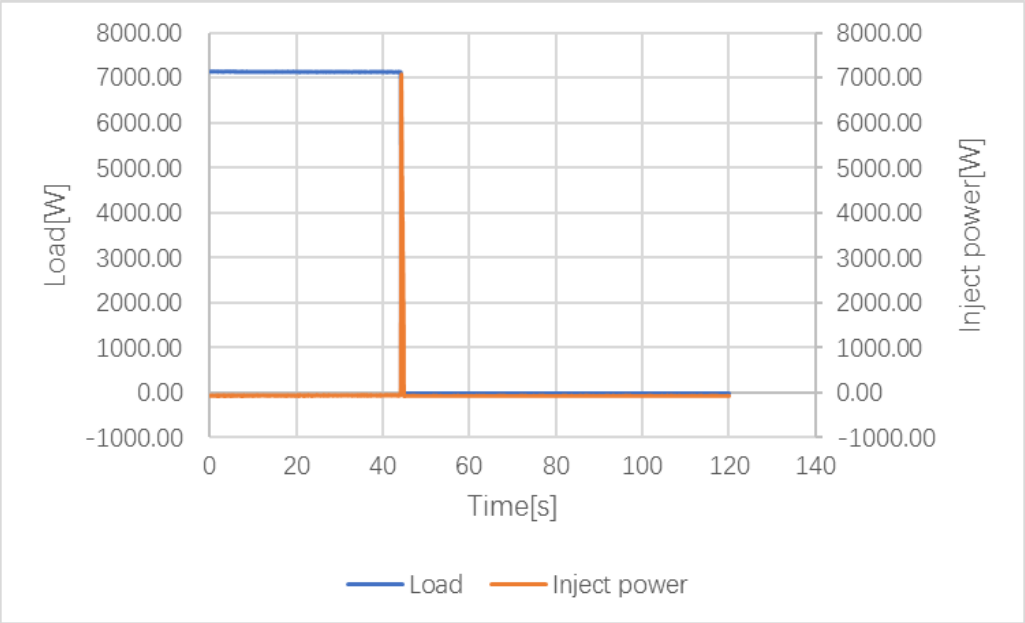
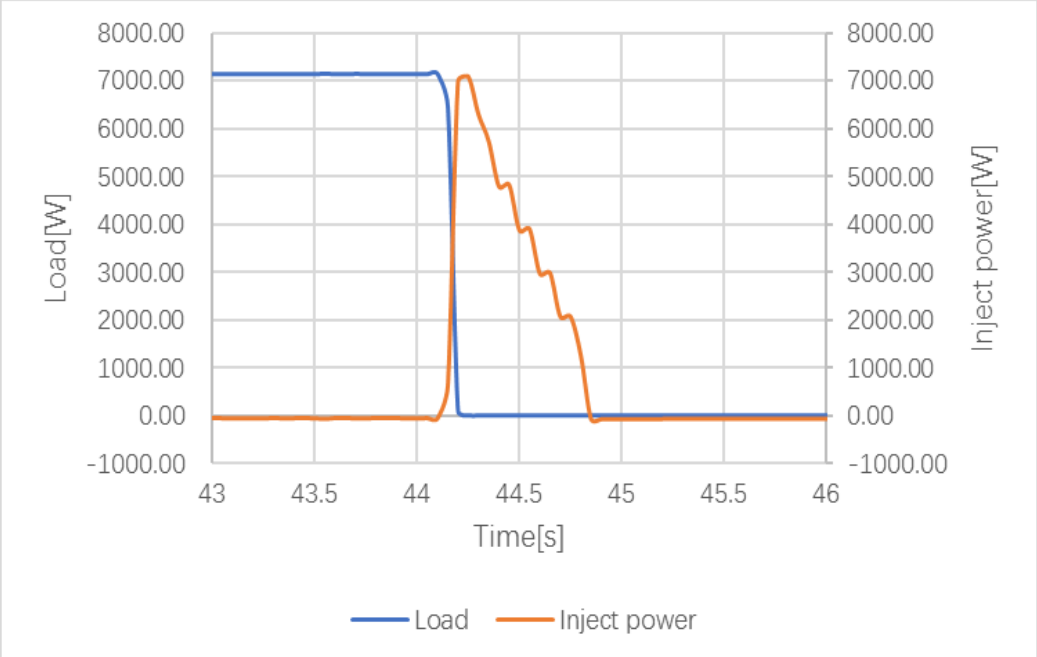
Clause	Requirement – Test	Result – Remark	Verdict

Graph 6_35% to 0%





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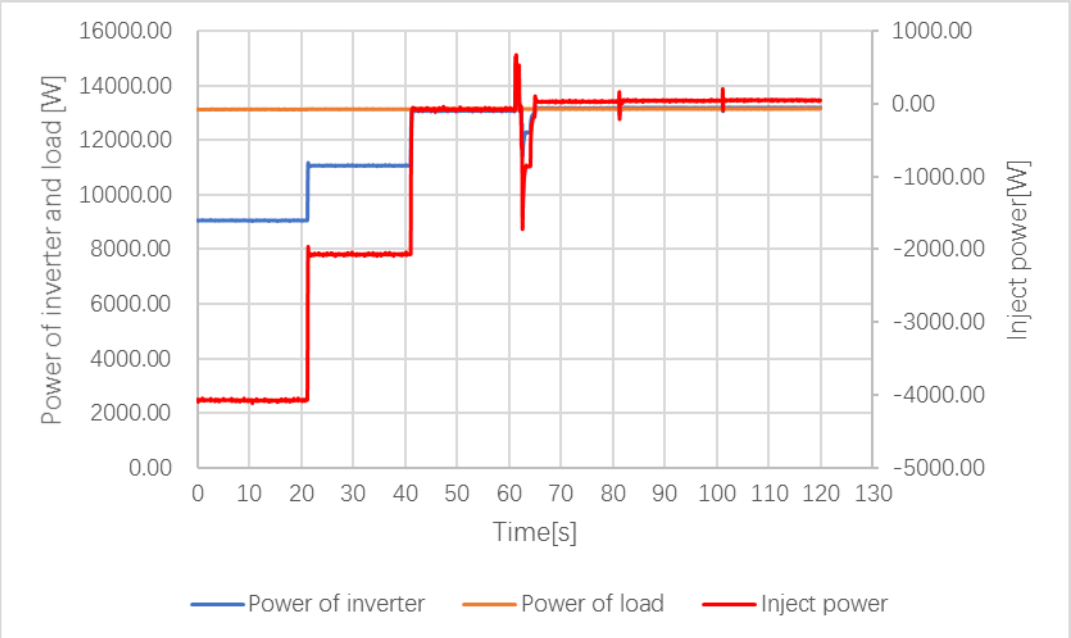
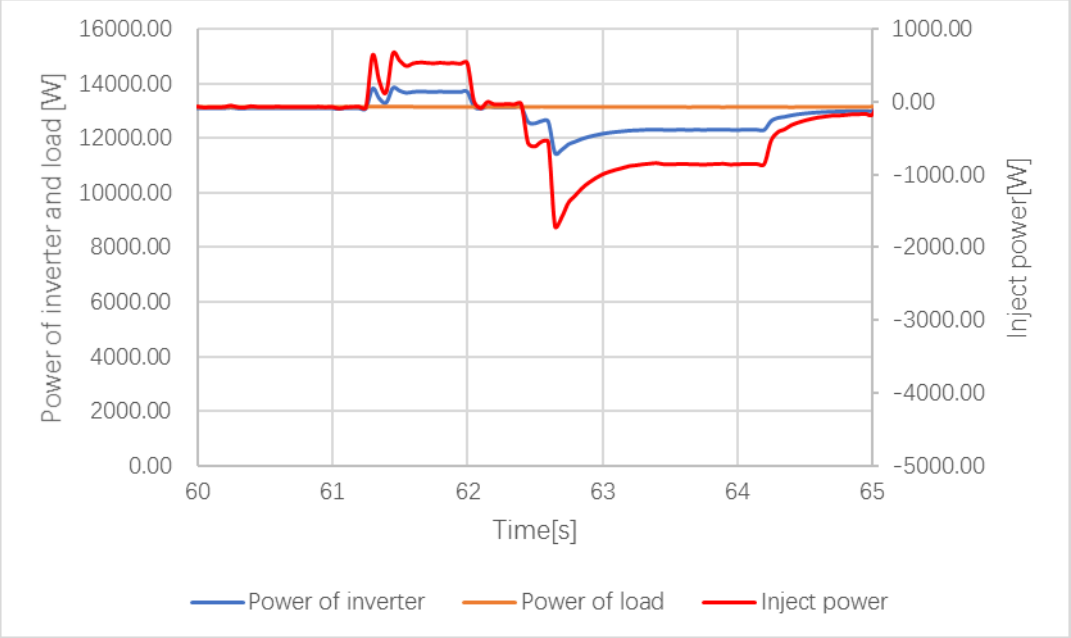
Clause	Requirement – Test	Result – Remark	Verdict

5.3	Response to power increases in the primary energy source				P
Step	Power of generator	load	re-adjust time <2s		
1	45%	65%	See graph 1 (0.85s)	See graph 2 (0.90s)	See graph 3 (0.10s)
2	55%	65%			
3	65%	65%			
4	75%	65%			
5	85%	65%			
6	95%	65%			

UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 1





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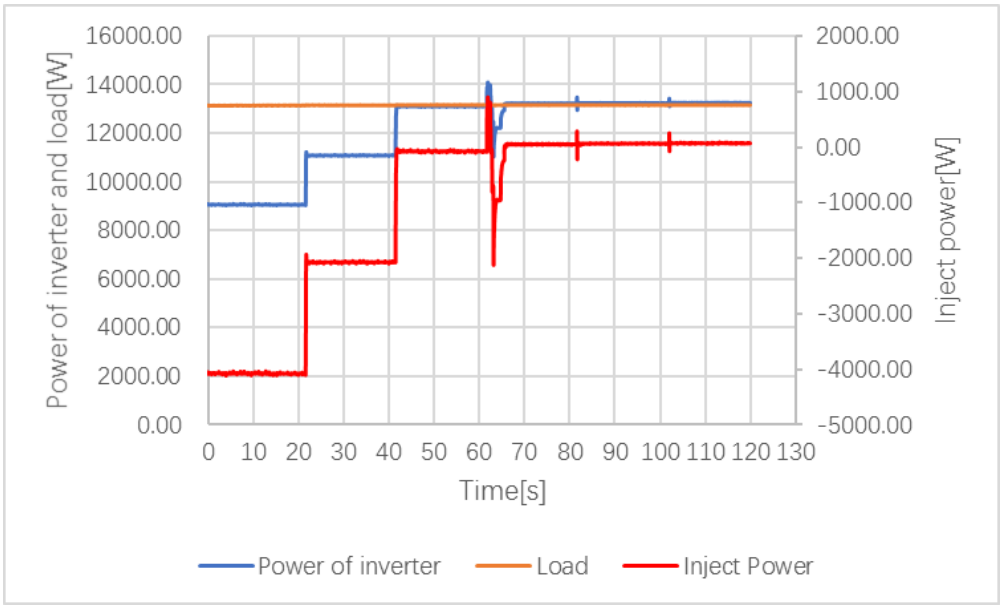
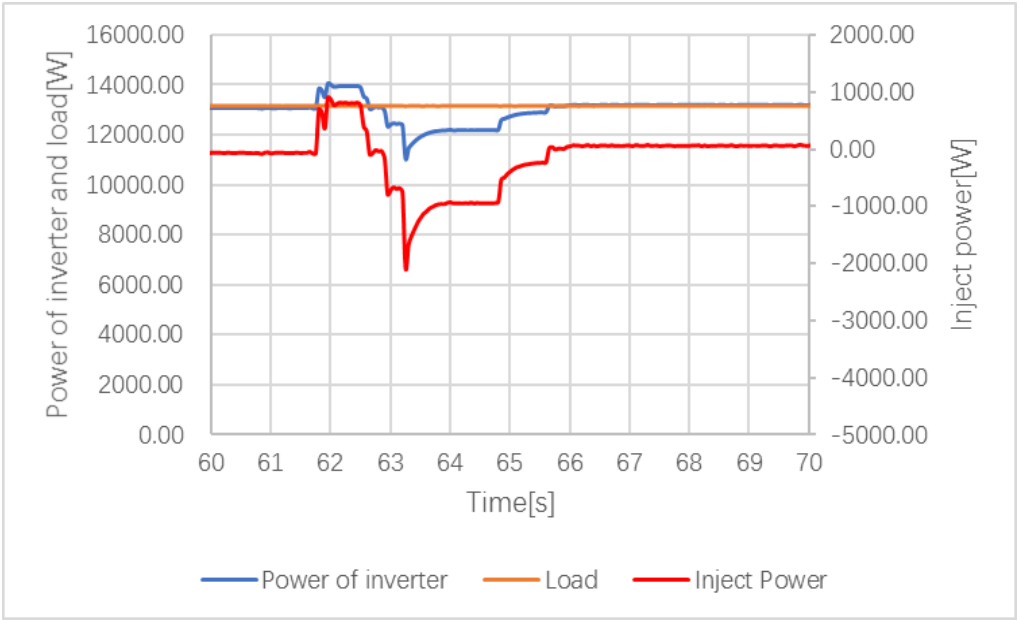
Clause	Requirement – Test	Result – Remark	Verdict

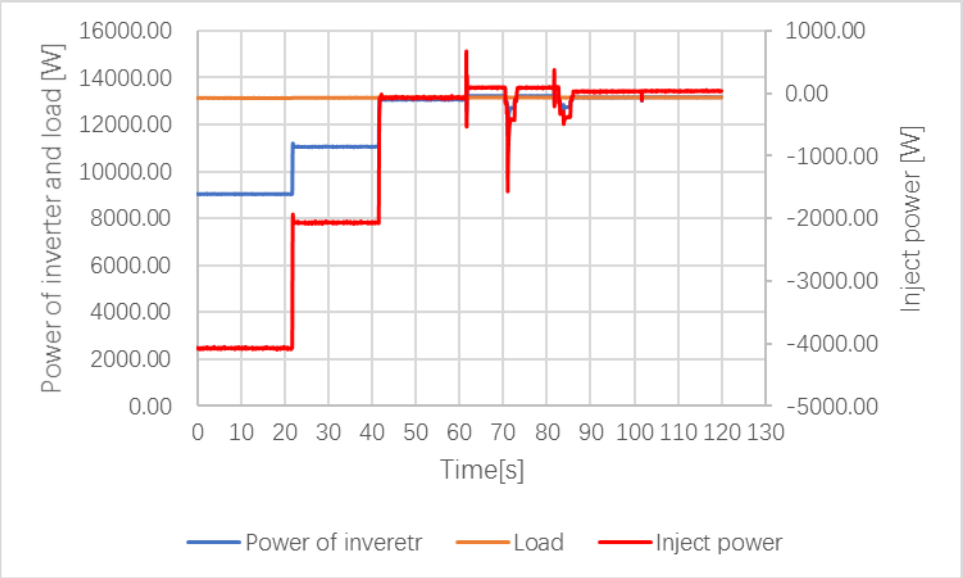
Graph 2

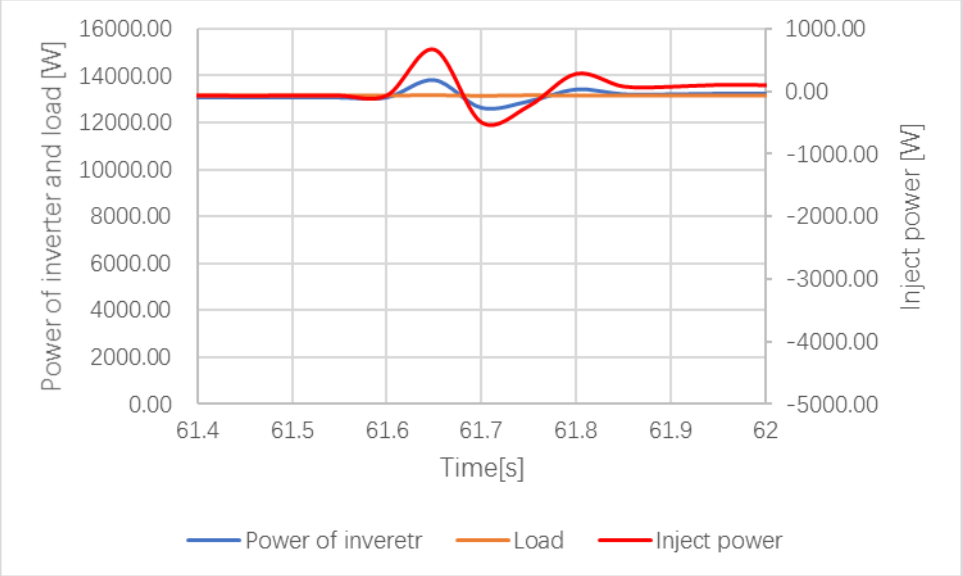




UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 3





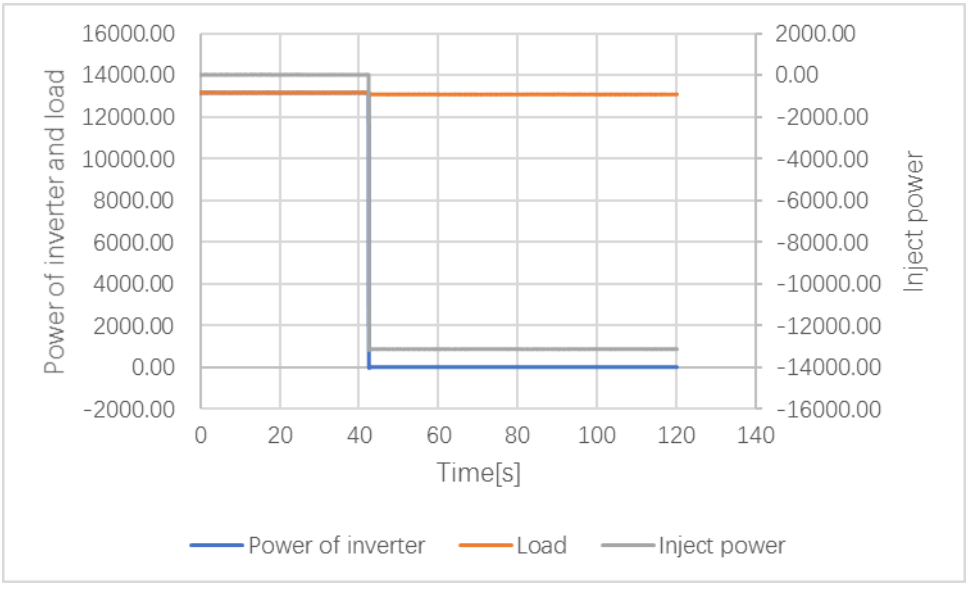
UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

5.4	Action in case of loss of communications			P
Step	Power of generator	load	Cut off communication re-adjust time <2s	
1	100%	65%	622.8ms	
2	100%	65%	712.0ms	
3	100%	65%	702.0ms	

UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

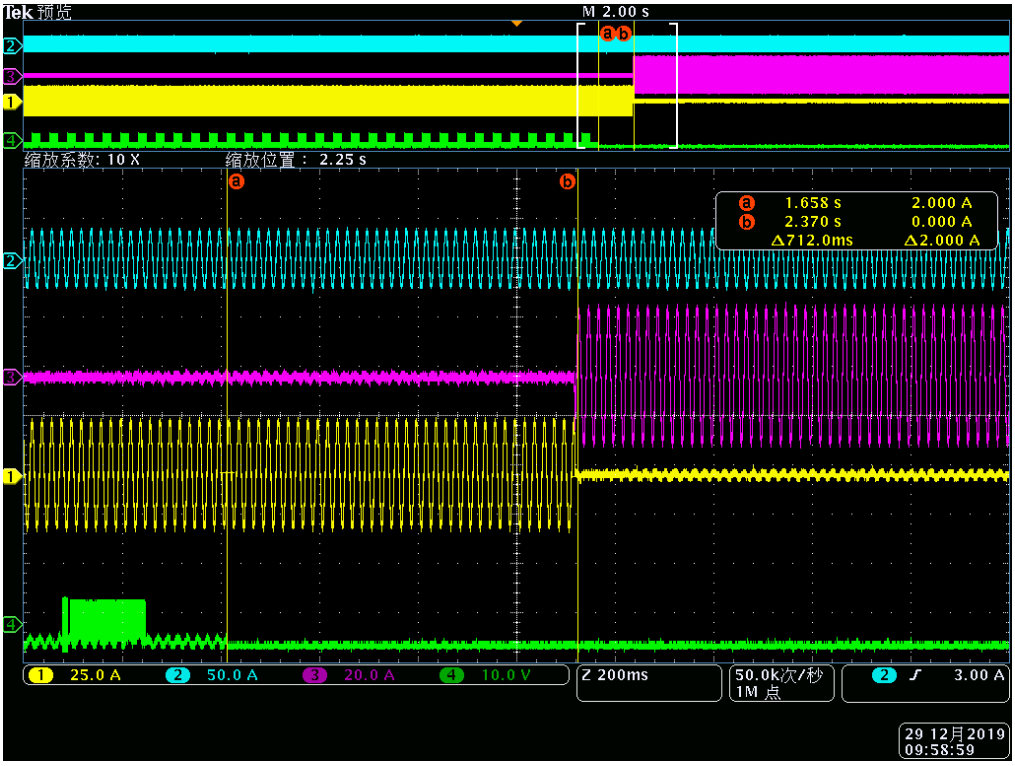
Graph 1

CH1 denotes current of inverter, CH2 denotes current of load, CH3 denotes current of Grid, CH4 denotes trip signal of communication

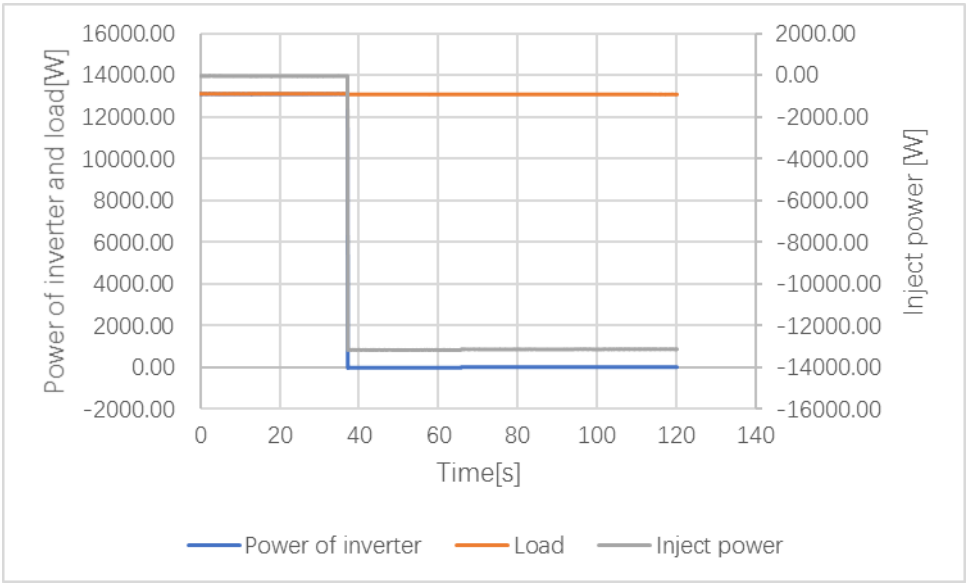


UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 2

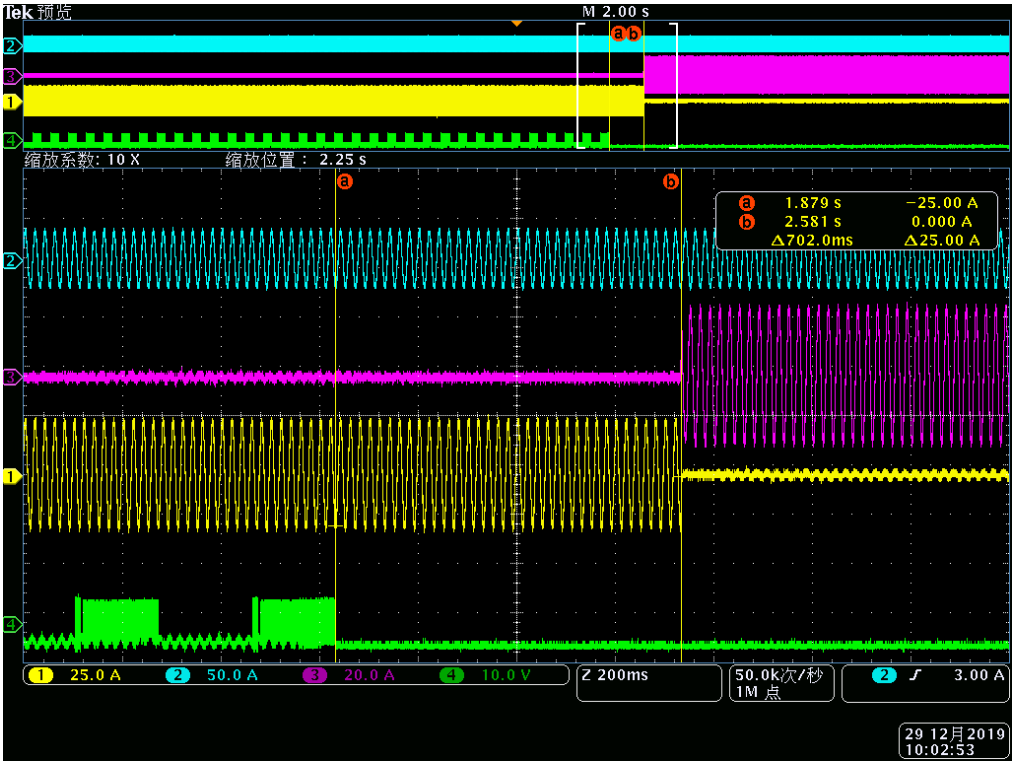


CH1 denotes current of inverter, CH2 denotes current of load, CH3 denotes current of Grid, CH4 denotes trip signal of communication

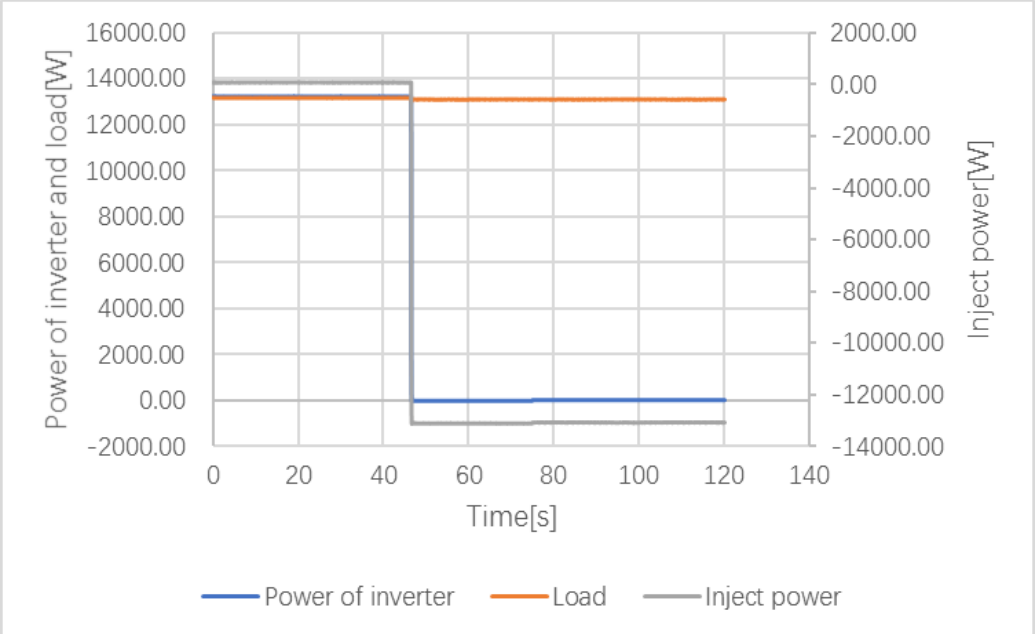


UNE 217001:2015 IN			
Clause	Requirement – Test	Result – Remark	Verdict

Graph 3



CH1 denotes current of inverter, CH2 denotes current of load, CH3 denotes current of Grid, CH4 denotes trip signal of communication



Appendix: photos

Front view of inverter

Meter view

End of Report)