

DECLARAÇÃO DE CONFORMIDADE DOS MICROINVERSORES TSUNESS COM A PORTARIA INMETRO Nº 515 DE 10 DE NOVEMBRO DE 2023.

DECLARATION OF CONFORMITY OF TSUNESS MICROINVERTERS WITH INMETRO ORDINANCE No. 515 OF NOVEMBER 10, 2023.

TSUNESS CO LTD com sede no endereço 2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town, Xiangcheng District, Suzhou City, Jiangsu Province, China, **declara** que os microinversores **TSOL-MP3000, TSOL-MS2000, TSOL-MX2250, TSOL-MX2500D, e TSOL-MX3000D** estão em conformidade com a portaria **Inmetro Nº 515, de 10 de novembro de 2023**, que altera a Portaria Inmetro Nº 140, de 21 de março de 2022.

TSUNESS CO LTD, with its registered address at 2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town, Xiangcheng District, Suzhou City, Jiangsu Province, China, hereby declares that the microinverters TSOL-MP3000, TSOL-MS2000, TSOL-MX2250, TSOL-MX2500D, and TSOL-MX3000D are in compliance with Inmetro Regulation No. 515, dated November 10, 2023, which amends Inmetro Regulation No. 140, dated March 21, 2022..

A portaria **INMETRO N. 515/2023**, estabelece critérios específicos para a segurança dos inversores fotovoltaicos. Conforme artigo **5.4.8** "os inversores on-grid devem extinguir ou interromper o arco em série em, no máximo, 2,5 s ou antes da energia do arco exceder 750 J, o que ocorrer primeiro, em todas as condições de operação" e conforme artigo **5.4.8.2** "para inversores on-grid com tensão de circuito aberto de até 120V e corrente de curto-circuito de até 20A, a funcionalidade de interrupção do arco elétrico pode ser dispensada, desde que a tecnologia de controle do equipamento garanta a extinção do arco elétrico, em todas as condições de operação."

Inmetro Ordinance No. 515/2023 establishes specific criteria for the safety of photovoltaic inverters. According to article 5.4.8, "on-grid inverters must extinguish or interrupt the series arc in a maximum of 2.5 seconds or before the arc energy exceeds 750 J, whichever occurs first, under all operating conditions." Furthermore, according to article 5.4.8.2, "for on-grid inverters with an open-circuit voltage of up to 120V and a short-circuit current of up to 20A, the electric arc interruption functionality may be waived, provided that the equipment's control technology ensures the extinction of the electric arc under all operating conditions."

Declaramos que a topologia do microinversor TSOL-MP3000 sempre atendeu aos artigos supramencionados da portaria Inmetro 515/2023 sendo recertificado em 31 de Julho de 2024. O microinversor TSOL-MS2000 teve sua topologia ajustada e foi recertificado em 31 de julho de 2024. Por fim, os microinversores TSOL-MX2250, TSOL-MX2500D, e TSOL-MX3000D foram desenvolvidos e desde a primeira peça fabricada e exportada em conformidade com a portaria 515/2023.

We declare that the topology of the TSOL-MP3000 microinverter has always complied with the aforementioned articles of Inmetro Ordinance 515/2023 and was recertified on July 31, 2024. The TSOL-MS2000 microinverter had its topology adjusted and was recertified on July 31, 2024. Finally, the TSOL-MX2250,, TSOL-MX2500D, and TSOL-MX3000D microinverters were developed, and have been manufactured and exported in full compliance with Regulation 515/2023 since the very first unit

Anexamos a primeira página de cada *Test Report* (relatório de ensaio), contendo os números, datas e normas atendidas, comprovando a conformidade com as exigências estabelecidas. Os *Test Reports* completos foram protocolados no INMETRO e estão à total disposição de qualquer concessionária mediante solicitação formal.

We are attaching the first page of each Test Report, containing the numbers, dates, and standards met, proving compliance with the established requirements. The complete Test Reports have been filed with INMETRO and are available to any concessionaire upon formal request.

Atesto a veracidade desta declaração, contendo 05 páginas, para os devidos fins.

I hereby certify the truthfulness of this declaration containing 05 pages, for all necessary purposes.

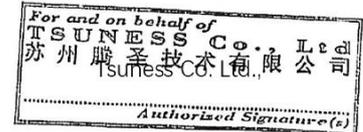


Mr. Andy Liu
CEO



Mr. Chenyang Pei
Product Director

Suzhou, China, September 16, 2025
Tsunes Co. Ltd.,



Headquarter

TSUNESS Co., Ltd
www.tsun-ess.com

2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town, Xiangcheng District,
Suzhou City, Jiangsu Province, China

TSUNESS Brazil Branch

TSUNESS Co., Ltd
www.pt.tsun-ess.com

Belo Horizonte, Minas Gerais, Brazil
Contato Suporte Técnico: +55 31 99635-3765



中国认可
国际互认
检测
TESTING
CNAS L14701

RELATÓRIO DE TESTE
TEST REPORT

Número do aplicativo
Application number: PVP06034/24B-02

Candidato
Applicant: TSUNESS Co., Ltd

Endereço
Address: 2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town,
Xiangcheng District, Suzhou City, Jiangsu Province, P.R.
China

Tipo de equipamento
Equipment Type: Microinversor FV

Nome do modelo
Model Name: TSOL-MS2000

Marca
Brand Name: 

Avaliações
Ratings: See copy of marking label and model list.

Padrão de Teste
Test Standard: ABNT NBR 16149:2013, ABNT NBR 16150:2013,
ABNT NBR IEC 62116:2012, with deviations of
ORDINANCE No. 140, OF MARCH 21, 2022 and
ORDINANCE No. 515, OF NOVEMBER 10, 2023

Data de chegada da amostra:
Sample arrival date: Jun. 26, 2023

Data do teste
Test Date: Jun. 26, 2023 to Sep. 03, 2023 &
Jul. 22, 2024 to Jul. 30, 2024

Data de emissão
Date of Issue: Jul. 31, 2024

PUBLICADO POR / ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Testado por

Tested by: Leo Sun

Leo Sun

Verificado por

Checked by: Tao Zheng

Tao Zheng





中国认可
国际互认
检测
TESTING
CNAS L14701

RELATÓRIO DE TESTE

TEST REPORT

Número do aplicativo	PVP08034/24B-01
Application number:	
Candidato	TSUNESS Co., Ltd
Applicant:	
Endereço	2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town, Xiangcheng District, Suzhou City, Jiangsu Province, P.R. China
Address:	
Tipo de equipamento	Micro inverter
Equipment Type:	
Nome do modelo	TSOL-MP3000
Model Name:	
Marca	
Brand Name:	
Avaliações	See copy of marking label and model list.
Ratings:	
Padrão de Teste	ABNT NBR 16149:2013, ABNT NBR 16150:2013, ABNT NBR IEC 62116:2012, with deviations of ORDINANCE No. 140, OF MARCH 21, 2022 and ORDINANCE No. 515, OF NOVEMBER 10, 2023
Test Standard:	
Data do teste	Jun. 28, 2022 to Aug. 18, 2022& Jul. 22, 2024 to Jul. 30, 2024
Test Date:	
Data de emissão	Jul. 31, 2024
Date of Issue:	

PUBLICADO POR / ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Testado por

Tested by: Leo Sun

Leo Sun

Verificado por

Checked by: Tao Zheng

Tao Zheng



Teste Report – TSOL-MX2250

Report No.: BL-DG24A0056-202



中国认可
国际互认
检测
TESTING
CNAS L14701

RELATÓRIO DE TESTE
TEST REPORT

Número do aplicativo
Application number: PVP09031/24B-04
Candidato
Applicant: TSUNESS Co., Ltd
Endereço
Address: 2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town,
Xiangcheng District, Suzhou City, Jiangsu Province, P.R. China
Tipo de equipamento
Equipment Type: Microinversor FV
Nome do modelo
Model Name: TSOL-MX2250
Marca
Brand Name: 
Avaliações
Ratings: See copy of marking label and model list.
Padrão de Teste
Test Standard: ABNT NBR 16149:2013, ABNT NBR 16150:2013,
ABNT NBR IEC 62116:2012, with deviations of
ORDINANCE No. 140, OF MARCH 21, 2022 and
ORDINANCE No. 515, OF NOVEMBER 10, 2023
Data de chegada da amostra:
Sample arrival date: Sep. 09, 2024
Data do teste
Test Date: Sep. 09, 2024 to Oct. 23, 2024
Data de emissão
Date of Issue: Oct. 25, 2024

PUBLICADO POR / ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Testado por

Tested by: Leo Sun

Leo Sun

Verificado por

Checked by: Tao Zheng

Tao Zheng

Aprovado por

Approved by: Simon Qi

Simon Qi





中国认可
国际互认
检测
TESTING
CNAS L14701

RELATÓRIO DE TESTE
TEST REPORT

Número do aplicativo	PVP02057/25B-001
Application number:	
Candidato	TSUNESS Co., Ltd
Applicant:	
Endereço	2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town, Xiangcheng District, Suzhou City, Jiangsu Province, P.R. China
Address:	
Tipo de equipamento	Microinversor FV
Equipment Type:	
Nome do modelo	TSOL-MX2500D
Model Name:	
Marca	
Brand Name:	
Avaliações	See copy of marking label and model list.
Ratings:	
Padrão de Teste	ABNT NBR 16149:2013, ABNT NBR 16150:2013, ABNT NBR IEC 62116:2012, with deviations of ORDINANCE No. 140, OF MARCH 21, 2022 and ORDINANCE No. 515, OF NOVEMBER 10, 2023
Test Standard:	
Data de chegada da amostra:	Mar. 21, 2025
Sample arrival date:	
Data do teste	Mar. 21, 2025 to Apr. 17, 2025
Test Date:	
Data de emissão	Apr. 18, 2025
Date of Issue:	

PUBLICADO POR / ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Testado por

Verificado por

Aprovado por

Tested by: Leo Sun

Checked by: Tao Zheng

Approved by: Simon Qi

Leo Sun

Tao Zheng

Simon Qi



Teste Report – TSOL-MX3000D

Report No.: BL-DG24A0102-202



中国认可
国际互认
检测
TESTING
CNAS L14701

RELATÓRIO DE TESTE
TEST REPORT

Número do aplicativo
Application number: PVP08013/24B-004

Candidato
Applicant: TSUNESS Co., Ltd

Endereço
Address: 2nd Floor, Building 2, No. 55 Aigehao Road, Weitang Town,
Xiangcheng District, Suzhou City, Jiangsu Province, P.R.
China

Tipo de equipamento
Equipment Type: PV Microinverter

Nome do modelo
Model Name: TSOL-MX3000D

Marca
Brand Name: 

Avaliações
Ratings: See copy of marking label and model list.

Padrão de Teste
Test Standard: ABNT NBR 16149:2013, ABNT NBR 16150:2013,
ABNT NBR IEC 62116:2012, with deviations of
ORDINANCE No. 140, OF MARCH 21, 2022 and
ORDINANCE No. 515, OF NOVEMBER 10, 2023

Data de chegada da amostra:
Sample arrival date: Oct. 23, 2024

Data do teste
Test Date: Oct. 23, 2024 to Dec. 26, 2024

Data de emissão
Date of Issue: Dec. 27, 2024

PUBLICADO POR / ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Testado por

Tested by: Leo Sun

Leo Sun

Verificado por

Checked by: Tao Zheng

Tao Zheng

Aprovado por

Approved by: Simon Qi

Simon Qi

