

# Zertifikat

# Certificate



Zertifikat Nr. *Certificate No.*  
R 50588730

Blatt *Sheet*  
0001

Ihr Zeichen *Client Reference*  
L.L.

Unser Zeichen *Our Reference*  
ZC10-WCJ-CN23GZU1 001

Ausstellungsdatum *Date of Issue*  
14.06.2023  
(day/mo/yr)

**Genehmigungsinhaber *License Holder***

Zhejiang Tengen Electric Co., Ltd.  
Sulv Industrial Area,  
Liushi Town, Yueqing City,  
325604 Zhejiang  
P.R. China

**Fertigungsstätte *Manufacturing Plant***

Zhejiang Tengen Smart Electrics  
Co., Ltd  
No. 2777 West Zhongshan Road,  
Xiuzhou District,  
Jiaxing  
314000 Zhejiang  
P.R. China

**Prüfzeichen *Test Mark***

Geprüft nach *Tested acc. to*  
EN IEC 60947-3:2021



**Zertifiziertes Produkt (Geräteidentifikation)  
*Certified Product (Product Identification)***

Lizenzentgelte - Einheit  
*License Fee - Unit*

Switch-disconnector (PV Switch-disconnector)

Type Designation: TGHX3-32P-yz (TENGEN (Logo))  
(y=2, 2P, 3C, 3P, 3T, 4, 4P, 4T, 6, 6C, 6T, 8, 8T, 9C, 9T; z=M, D)  
Ambient Temperature : -40°C to +85°C  
Utilization Category : DC-PV1, DC-PV2, DC-21B, AC-22B  
Polarity : No polarity  
Number of Poles : 2/3/4/6/8/9 layers  
Rated Operational Voltage (Ue) : 600/800/1000/1100/1200/1500VDC  
230/400/690VAC

8

Rated Current (Ie):

DC-PV1 and DC-21B

(y=2, 4, 6, 8) : 600V/32A, 800V/32A, 1000V/20A, 1100V/20A  
(y=3C, 6C, 9C) : 600V/32A, 1000V/13A, 1100V/13A  
(y=3T, 6T, 9T) : 1000V/32A, 1500V/20A  
(y=4T, 8T) : 1500V/25A

DC-PV2 and DC-21B

(y=2, 4, 6, 8) : 600V/32A, 800V/20A, 1000V/12.5A  
1100V/10A, 1200V/ 7.5A  
(y=3C, 6C, 9C) : 600V/32A, 800V/20A, 1000V/12.5A, 1200V/ 7.5A  
AC-22B  
(y=2P, 3P, 4P) : AC230V/32A, AC400V/32A, AC690V/32A

ANLAGE (Appendix): 1

8

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.  
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg

http://www.tuv.com/safety E-mail: markcheck@tuv.com  
Fax: +49 221 806-3935

Zertifizierungsstelle



Wencai Zhang

# Zertifikat

# Certificate



Zertifikat Nr. *Certificate No.*  
R 50588730

Blatt *Sheet*  
0002

Ihr Zeichen *Client Reference*  
L.L.

Unser Zeichen *Our Reference*  
ZC10-WCJ-CN23GZU1 001

Ausstellungsdatum  
14.06.2023

*Date of Issue*  
(day/mo/yr)

**Genehmigungsinhaber *License Holder***

Zhejiang Tengen Electric Co., Ltd.  
Sulv Industrial Area,  
Liushi Town, Yueqing City,  
325604 Zhejiang  
P.R. China

**Fertigungsstätte *Manufacturing Plant***

Zhejiang Tengen Smart Electrics  
Co., Ltd  
No. 2777 West Zhongshan Road,  
Xiuzhou District,  
Jiaxing  
314000 Zhejiang  
P.R. China

**Prüfzeichen *Test Mark***



**Geprüft nach *Tested acc. to***  
EN IEC 60947-3:2021

**Zertifiziertes Produkt (Geräteidentifikation)**  
*Certified Product (Product Identification)*

**Lizenzentgelte - Einheit**  
*License Fee - Unit*

Switch-disconnector (PV Switch-disconnector)

Continuation from page 0001

Rated Insulation Voltage (Ui)	:1500V
Rated Impulse Withstand Voltage (Uimp)	:8.0kV
Conventional Free Air ThermalCurrent (Ith)	:32A
Rated Short-time Withstand Current (Icw)	:760A,1s
Rated Short-time MakingCapacity (Icm)	:1400A
Pollution Degree	:3
Suitability for Isolation	:Yes
Degree of Protection	:IP20 (IP66NW installation with PCE)

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.  
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

**TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg**

http://www.tuv.com/safety E-mail: markcheck@tuv.com  
Fax: +49 221 806-3935

Zertifizierungsstelle



Wencai Zhang

Zhejiang Tengen Electric Co., Ltd.  
Li Li

Date : 14.06.2023  
Our ref. : WCJ ZC10  
Your ref.: L.L.

Sulv Industrial Area,  
Liushi Town, Yueqing City,  
325604 Zhejiang  
P.R. China

**Ref : R TÜV-Mark Approval**

Type of Equipment : PV Switch-disconnector  
Model Designation : See Certificate  
Certificate No. : R 50588730 0001  
Report No. : CN23GZU1 001

Dear Li Li,

The above specified equipment has been tested and found to be in accordance with the relevant requirements.

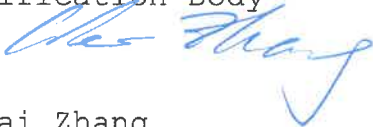
Please find enclosed your certificate as specified above.

If cancellation of the certificate is submitted by 15 November in a given year, no fee will be charged for the following year.

The certificate is issued with the reservation that the license holder applies all information required in § 6 of the ProdSG related to name and address of the manufacturer or his authorized representative / importer, including their respective contact addresses on the product prior to marketing of the product in the European Economic Area. In case you have a change regarding your involved local representative for the certificate, please inform us in due time.

With kind regards,

Certification Body



Wencai Zhang

cc: Zhejiang Tengen Electric Co., Ltd.

Enclosure

证书的详细资料请登陆[www.certipedia.com](http://www.certipedia.com)查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询

# C E R T I F I C A T E



of Conformity  
Low Voltage Directive 2014/35/EU

Registration No.: AN 50588733 0001

Report No.: CN23GZU1 001

Holder: Zhejiang Tengen Electric Co., Ltd.  
Sulv Industrial Area,  
Liushi Town, Yueqing City,  
325604 Zhejiang  
P.R. China

Product: Switch-disconnector  
(PV Switch-disconnector)

Identification: Type Designation: TGHX3-32P-yz (TENGEN (Logo))  
(y=2, 2P, 3C, 3P, 3T, 4, 4P, 4T, 6, 6C, 6T, 8, 8T, 9C, 9T; z=M, D)  
Serial No. : Engineering sample

Remark: Issued in conjunction with TÜV Rheinland license  
R 50588730 0001-0002.

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.

Certification Body



Date 14.06.2023

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

Zhejiang Tengen Electric Co., Ltd.  
Li Li

Date : 14.06.2023  
Our ref. : WCJ ZC10  
Your ref.: L.L.

Sulv Industrial Area,  
Liushi Town, Yueqing City,  
325604 Zhejiang  
P.R. China

**Ref : AN Certificate of Conf. Low Voltage D.**

Type of Equipment : PV Switch-disconnector  
Model Designation : See Certificate  
Certificate No. : AN 50588733 0001  
Report No. : CN23GZU1 001

Dear Li Li,

The above specified equipment has been tested and found to be in accordance with the relevant requirements.

Please find enclosed your certificate as specified above.

If cancellation of the certificate is submitted by 15 November in a given year, no fee will be charged for the following year.

The certificate is issued with the reservation that the license holder applies all information required in § 6 of the ProDSG related to name and address of the manufacturer or his authorized representative / importer, including their respective contact addresses on the product prior to marketing of the product in the European Economic Area. In case you have a change regarding your involved local representative for the certificate, please inform us in due time.

With kind regards,

Certification Body



Wencai Zhang

CC: Zhejiang Tengen Electric Co., Ltd.

Enclosure

证书的详细资料请登陆[www.certipedia.com](http://www.certipedia.com)查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询

Certificate No. R 50588730 0001 Our Reference ZC10-WCJ-CN23GZU1 001 Appendix No. 1

**Constructional Data Form (CDF) for PV Switch-disconnector**

Page 1 of 5

License holder: Zhejiang Tengen Electric Co., Ltd.  
 (full address): Sulv Industrial Area, Liushi Town, Yueqing City, 325604 Zhejiang P.R.China  
 Factory: Zhejiang Tengen Smart Electrics Co., Ltd  
 (full address) : No. 2777 West Zhongshan Road, Xiuzhou District, Jiaxing 314000 Zhejiang P.R. China  
 Type or Model Number: TGHX3-32P-yz(y=2,2P,3C,3P,3T,4,4P,4T,6,6C,6T,8,8T,9C,9T; z=M, D)  
 Kind of device: PV Switch-disconnector

Type designation		TGHX3-32P-yz(y=2,2P,3C,3P,3T,4,4P,4T,6,6C,6T,8,8T,9C,9T; z=M, D)					
Ambient temperature		-40°C~+85°C (the maximum ambient temperature is +70°C without de-ratings. The de-ratings at +85°C, please refer to the Guidance of the manufacturer)					
Contact material		Moving / static: T3 (1µm Ag plated)/ H62(1µm Ag plated)					
Interrupting medium		Air					
Number of poles		2/3/4/6/8/9 layers					
Utilization category		AC-22B for AC system					
Rated operational voltage Ue (V)		230V AC		400V AC		690V AC	
Rated operational current Ie (A)	Connection code: 2P	32A		--		--	
	Connection code: 3P	32A		32A		32A	
	Connection code: 4P	32A		32A		32A	
Utilization category		DC-PV1, DC-PV2, DC-21B for DC system					
Rated operational voltage Ue (V)		600VDC	800V DC	1000V	1100V DC	1200V DC	1500V DC
Rated operational current Ie (A)	Connection code: 2	32A	32A	20A	20A	--	--
	Connection code: 3C	32A	--	13A	13A	--	--
	DC-PV1 Connection code: 3T	--	--	32A	--	--	20A
	DC-21B Connection code: 4	32A	32A	20A	20A	--	--
	Connection code: 4T	--	--	--	--	--	25A
	Connection code: 6	32A	32A	20A	20A	--	--
	Connection code: 6C	32A	--	13A	13A	--	--
	Connection code: 6T	--	--	32A	--	--	20A
	Connection code: 8	32A	32A	20A	20A	--	--
	Connection code: 8T	--	--	--	--	--	25A
	Connection code: 9C	32A	--	13A	13A	--	--
	Connection code: 9T	--	--	32A	--	--	20
	DC-PV2 DC-21B	Connection code: 2	32A	20A	12.5A	10A	7.5A
Connection code: 4	32A	20A	12.5A	10A	7.5A	--	
Connection code: 6	32A	20A	12.5A	10A	7.5A	--	
Connection code: 8	32A	20A	12.5A	10A	7.5A	--	

TÜV Rheinland Group  
2023-05-28



Date

Signature

License holder

Name

Company Stamp and Signature

**Certificate No.** R 50588730 0001    **Our Reference** ZC10-WCJ-CN23GZU1 001    **Appendix No.** 1

**Constructional Data Form (CDF) for PV Switch-disconnector**

Page 2 of 5

	Connection code: 3C	32A	20A	12.5A	--	7.5A	--
	Connection code: 6C	32A	20A	12.5A	--	7.5A	--
	Connection code: 9C	32A	20A	12.5A	--	7.5A	--
Rated frequency	AC 50Hz and DC						
Load circuit connection code diagram	Refer to table 1						
Insulation voltage $U_i$	1500 V						
Conventional free air thermal current $I_{th}$	32A for unenclosed switch						
Conventional enclosed thermal current at +40°C solar for annex D for IEC standard.	--						
Rated short-time withstand current $I_{cw}$	0.76kA, 1s						
Rated short-time making capacity $I_{cm}$	1.4kA						
Rated conditional short-circuit current $I_{cn}$	N/A						
Short circuit protective device	N/A						
Rated impulse withstand voltage	8.0 kV						
Overvoltage category	II						
IP code	IP20 Unenclosed use IP66NW enclosed outdoor use in power conditioning equipment( PCE)						
Pollution degree	3						
Suitability for isolation	Yes						
Polarity	No polarity, "+" and "-" polarities could be interchanged.						

**Terminals /connection:**

Type designation	TGHX3-32P-yz(y=2,2P,3C,3P,3T,4,4P,4T,6,6C,6T,8,8T,9C,9T; z=M, D)
Number of poles	2/3/4/6/8/9 layers
Terminal designation, main circuit	Refer to wiring diagrams
Type of terminal, main circuit	Screw clamping units
Rated cross sectional area, main circuit	1.0-6.0 mm <sup>2</sup>
Type of conductor	Flexible or rigid
Number of conductors per terminal	2
Required preparation of the conductor	Yes
Stripping length (mm), main circuit	8 mm
Tightening torque, main circuit (Nm)	1.2 Nm for M4
Material/plating terminal, main circuit	T3 copper

**TÜV Rheinland Group**

2023-05-28



Date

Signature

**License holder**

Name

Company Stamp and Signature

**Certificate No.** R 50588730 0001 **Our Reference** ZC10-WCJ-CN23GZU1 001 **Appendix No.** 1

**Constructional Data Form (CDF) for PV Switch-disconnector**

Page 3 of 5

Material/plating of the screw	ASTM1022
Material/plating of the washer	Q195

**Plastic insulating parts:**

Part name	Manufacturer	Material name	CTI (V)	Flame class	Material Group
Switch bottom base, odd base, even base, contact rotation shaft	CGN Juner (Zhejiang) New Materials Co.,Ltd.	PA66/B2GM	400V	GWT: 960°C	II
Handle	CGN Juner (Zhejiang) New Materials Co.,Ltd.	PA66/301-GM(b) E204321	175V	GWT: 960°C	IIIa
Limitation position for rotation of actuation	DuPont Performance Polymers	POM E41938	175V	GWT: 650°C	IIIa
Contact supporting	CGN JUNER NEW MATERIALS CO.,LTD.	PA66/B2NV0 E204321	400V	GWT: 960°C	II
Moved and fixed contact connection	Jiangxi Hongshong Copper Co. LTD	T3Y2/1µm plated Ag copper	--	--	--

**TYPE NOMENCLATURE AS FOLLOW:**

PV Switch-disconnector TGHX3-32P-yz(y=2,2P,3C,3P,3T,4,4P,4T,6,6C,6T,8,8T,9C,9T; z=M, D) series has the same design frame Conventional free air thermal current (I<sub>th</sub>):63A. Only for load connection code, installation method and handle nob are deviations. The details as follows:

TGHX3-aP/b/c/d/ef explanations as follows:

TG	H	X	3	-	32	P	-	y	z
1	2	3	4	5	6	7	8	9	10

1	<u>TG</u> →	PV DC Switch-disconnector for enterprise feature code: TG: ZHEJIANG TENGEN ELECTRIC CO., LTD.
2	<u>H</u> →	Class group code: H means Disconnector
3	<u>X</u> →	Class group code: X means Rotary switch
4	<u>3</u> →	Design serial number code: 3 means 3 version
5	<u>-</u> →	"-" Dash delimiter no meanings
6	<u>32</u> →	Conventional thermal current code; 32 means 32A
7	<u>P</u> →	Used in photovoltaic code: P
8	<u>-</u> →	"-" Dash delimiter no meanings
9	<u>y</u> →	Load connection code: y=2,2P,3C,3P,3T,4,4P,4T,6,6C,6T,8,8T,9C,9T; z=M, D
10	<u>z</u> →	Installation method code: y=M: panel installation, D: Guid rail installation or bottom plate installation

**TÜV Rheinland Group**  
 2023-05-28



Date

Signature

**License holder**

Name

Company Stamp and Signature



**Constructional Data Form (CDF) for PV Switch-disconnector**

The respective wiring diagrams approved by type tests for the supply and load terminals see below:

Table 1			
DC-PV1, DC-PV2, DC-21B		Wiring Diagram	Load Diagram
Connection code	Circuit Type		
2	2 layers		
3C	3 layers, 2 "+", 1 "-" Ie= "-" current		
3T	3 layers, 2 poles in series		
4	4 layers		
4T	4 layers, 3 poles in series		
6	6 layers		
6C	6 layers, 2 "+", 1 "-" Ie= "-" current 2 mirror unit		
6T	6 layers, 2 poles in series		

**TÜV Rheinland Group**  
2023-05-28

*Cheng Wang*

Date

Signature

**License holder**

Name

Company Stamp and Signature

Table 1			
DC-PV1, DC-PV2, DC-21B		Wiring Diagram	Load Diagram
Connection code	Circuit Type		
8	8 layers		
8T	8 layers, 3 poles in series		
9C	9 layers, 2 "+", 1 "-" Ie= "-" current 3 mirror unit		
9T	9 layers, 2 poles in series		

Table 1			
AC-22B		Wiring Diagram	Load Diagram
Connection code	Circuit Type		
2P	2 layers		
3P	3 layers		
4P	4 layers		

TÜV Rheinland Group

2023-05-28

*Chengze Wang*

Date

Signature

License holder

Name

Company Stamp and Signature