

Technical Report No.: 64.290.22.31025.01

Date: 2022-08-16

Client: **Name:** INVT Solar Technology (ShenZhen) Co., Ltd.

Address: 6th Floor, Block A, INVT Guangming Technology Building, Kejie Fourth Road, Shutianpu Community, Matian, Guangming District, 518000 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

Factory: **Name:** Shenzhen INVT Electric Co., Ltd. Bao'an Branch Factory

Address: F1-F4, No.3 Building, Emerson Industrial Park, Fengtang Road, Tangwei Community, Fuhai, Bao'an District, Shenzhen City, Guangdong Province, 518103, P.R. China

Test object: **Product:** Hybrid Solar Inverter

Model: BD6KTR-RH3, BD8KTR-RH3, BD10KTR-RH3, BD12KTR-RH3, BD15KTR-RH3

Trademark (if any): 

Test specification: EN 62109-1:2010, EN 62109-2:2011

Purpose of examination:

- Testing for compliance with specified requirements to assess conformity with the essential safety and health requirements of the following European Directives:
LVD 2014/35/EU
- Testing and evaluation according to the test specification

Test result: The test results show that the presented product is in compliance with the above listed test specifications.

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see testing and certification regulation, chapter A-3.4.

1. Description of the test object

1.1. Picture(s)

Refer to Photo Documentation

1.2. Function

- (1) All the models are three phase non-isolated type multi-functions Hybrid Solar Inverter which will be installed and connected to the grid network or standalone after installation. It has four operating modes:
 - PV to Grid mode
 - PV to battery mode
 - Grid to Battery charge mode
 - Battery discharge to grid
- (2) The inverter module shall be used at specified ambient conditions:
 - Outdoor.
 - Temperature range: -25 °C ~ +60 °C, auto-derating when ambient temperature is above 45 °C.
 - Altitude: ≤2000m.
 - Overvoltage category: III (Mains), II (Battery), II (PV)
 - Relative humidity range: 0 ~ 95 % (Condensing).
 - Can used in wet location.
 - Environment pollution degree: less than or equal to 3.
- (3) If certain functions are not permitted by local regulation, the function shall be disabled by hardware or software setting (if applicable) by the manufacturer before putting into the market. For example, it's not permissible to draw electricity from the grid and then feed it back in order to claim statutory reimbursement in some nations.
- (4) Low voltage electrical installations shall comply with national and local regulation. Only qualified electricians are allowed to install and maintain the converter.
- (5) In order to protect the inverter, user and installer, external DC and AC circuit breaker shall be equipped for all source port (battery, AC grid) at the end-use application.
- (6) The internal insulation structure of the inverter is adopted BI+SI combination mode.

1.3. Consideration of the foreseeable use

- ☐ Not applicable
☒ Covered through the applied standard
☐ Covered by the following comment*
☐ Covered by attached risk analysis

1.4. Technical Data

Model	BD6KTR- RH3	BD8KTR- RH3	BD10KTR- RH3	BD12KTR- RH3	BD15KTR- RH3
Battery terminal parameters					
Rated battery DC voltage	200 Vd.c.	250 Vd.c.	300 Vd.c.	350 Vd.c.	400 Vd.c.
Battery DC voltage range	125-600 Vd.c.				
Max charging / discharging current	50 Ad.c.				
Battery type	Lithium-ion				
Maximum charge/discharge power	15000 W				
PV terminal parameters					
Max. Input Power	9000 W	12000 W	15000 W	18000 W	22500 W
Maximum DC input voltage	1000 Vd.c.				
MPPT Range	180~850 Vd.c.				
MPPT Range (full load)	250~850 Vd.c.	330~850Vd.c.	430~850Vd.c.	510~850Vd.c.	620~850Vd.c.
Max. Input Current	2*13 Ad.c.				
Isc PV	2*16 Ad.c.				2*25 Ad.c.
Grid terminal parameters					
Rated output Power	6000 W	8000 W	10000 W	12000 W	15000 W
Maximum continuous output apparent power	6600 VA	8800 VA	11000 VA	13200 VA	16500 VA
Max. AC output current	9.5 Aa.c.	12.7 Aa.c.	15.9 Aa.c.	19.1 Aa.c.	23.8 Aa.c.
Maximum continuous input apparent power	13200 VA	17600 VA	22000 VA	26400 VA	33000 VA
Max. AC input current	19 Aa.c.	25.5 Aa.c.	31.9 Aa.c.	38.2 Aa.c.	47.6 Aa.c.
Rated AC voltage	230/400 Va.c., 3W+N+PE				
Rated AC frequency	50/60 Hz				
Power factor	0.9 lagging to 0.9 leading				
Backup terminal parameters					
Rated apparent power	6000 VA	8000 VA	10000 VA	12000 VA	15000 VA



Maximum continuous output apparent power	6600 VA	8800 VA	11000 VA	13200 VA	16500 VA
Max. AC current	9.5 Aa.c.	12.7 Aa.c.	15.9 Aa.c.	19.1 Aa.c.	23.8 Aa.c.
Rated AC voltage	230/400 Va.c., 3W+N+PE				
Rated AC frequency	50/60 Hz				
General					
Protection class	I				
Ingress protection	IP 65				
Overvoltage Category	II(PV/Battery), III(Mains)				
Temperature	-25 °C ~ +60 °C, derating above 45 °C				
Altitude	≤2000				

1.5. Rating Label

Hybrid Solar Inverter BD6KTR-RH3		
PV input port	Max. PV input power	9kW
	Max. PV input voltage	dc,1000V
	MPPT voltage range	dc,180-850V
	Full Power MPPT voltage range	dc,250-850V
	Max. PV input current	dc,2*13A
Battery input port	Isc PV(absolute maximum)	dc,2*16A
	Rated battery voltage	200V
	Battery voltage range	125V-600V
	Rated battery charge /discharge current	dc,40/40A
	Max. battery charge /discharge current	dc,50/50A
Grid output/input port	Battery type	Lithium-ion
	Rated grid voltage	3W+N+PE,230/400V
	Rated grid frequency	50Hz/60Hz
	Rated output power	6000W
	Max. grid output apparent power	6600VA
Back-up output port	Max. grid output current	ac,9.5A
	Max. grid input apparent power	13200VA
	Max. grid input current	ac,19A
	Rated Back-up voltage	3W+N+PE,230/400V
	Rated Back-up frequency	50Hz/60Hz
General information	Max. Back-up output apparent power	6600VA
	Max. Back-up output current	ac,9.5A
	Adjustable cos (φ)	0.8ind...0.8cap
	Operating temperature range	-25.....+60℃
	Inverter topology	Non-Isolated
	Ingress protection	IP65
	Protective class	I
	Overvoltage category	II(PV),III(MAINS)
Made in China		

Hybrid Solar Inverter BD8KTR-RH3		
PV input port	Max. PV input power	12kW
	Max. PV input voltage	dc,1000V
	MPPT voltage range	dc,180-850V
	Full Power MPPT voltage range	dc,330-850V
	Max. PV input current	dc,2*13A
Battery input port	Isc PV(absolute maximum)	dc,2*16A
	Rated battery voltage	250V
	Battery voltage range	125V-600V
	Rated battery charge /discharge current	dc,40/40A
	Max. battery charge /discharge current	dc,50/50A
Grid output/input port	Battery type	Lithium-ion
	Rated grid voltage	3W+N+PE,230/400V
	Rated grid frequency	50Hz/60Hz
	Rated output power	8000W
	Max. grid output apparent power	8800VA
Back-up output port	Max. grid output current	ac,12.7A
	Max. grid input apparent power	17600VA
	Max. grid input current	ac,25.5A
	Rated Back-up voltage	3W+N+PE,230/400V
	Rated Back-up frequency	50Hz/60Hz
General information	Max. Back-up output apparent power	8800VA
	Max. Back-up output current	ac,12.7A
	Adjustable cos (φ)	0.8ind...0.8cap
	Operating temperature range	-25.....+60℃
	Inverter topology	Non-Isolated
	Ingress protection	IP65
	Protective class	I
	Overvoltage category	II(PV),III(MAINS)
Made in China		

Hybrid Solar Inverter BD10KTR-RH3		
PV input port	Max. PV input power	15kW
	Max. PV input voltage	dc,1000V
	MPPT voltage range	dc,180-850V
	Full Power MPPT voltage range	dc,430-850V
	Max. PV input current	dc,2*13A
Battery input port	Isc PV(absolute maximum)	dc,2*16A
	Rated battery voltage	300V
	Battery voltage range	125V-600V
	Rated battery charge /discharge current	dc,40/40A
	Max. battery charge /discharge current	dc,50/50A
Grid output/input port	Battery type	Lithium-ion
	Rated grid voltage	3W+N+PE,230/400V
	Rated grid frequency	50Hz/60Hz
	Rated output power	10000W
	Max. grid output apparent power	11000VA
Back-up output port	Max. grid output current	ac,15.9A
	Max. grid input apparent power	22000VA
	Max. grid input current	ac,31.9A
	Rated Back-up voltage	3W+N+PE,230/400V
	Rated Back-up frequency	50Hz/60Hz
General information	Max. Back-up output apparent power	11000VA
	Max. Back-up output current	ac,15.9A
	Adjustable cos (φ)	0.8ind...0.8cap
	Operating temperature range	-25.....+60℃
	Inverter topology	Non-Isolated
	Ingress protection	IP65
	Protective class	I
	Overvoltage category	II(PV),III(MAINS)
Made in China		

invt

Hybrid Solar Inverter BD12KTR-RH3

PV input port	Max. PV input power	18kW
	Max. PV input voltage	dc,1000V
	MPPT voltage range	dc,180-850V
	Full Power MPPT voltage range	dc,510-850V
	Max. PV input current	dc,2*13A
	Isc PV(absolute maximum)	dc,2*16A
Battery input port	Rated battery voltage	350V
	Battery voltage range	125V-600V
	Rated battery charge /discharge current	dc,40/40A
	Max. battery charge /discharge current	dc,50/50A
	Battery type	Lithium-ion
Grid output/input port	Rated grid voltage	3W+N+PE,230/400V
	Rated grid frequency	50Hz/60Hz
	Rated output power	12000W
	Max. grid output apparent power	13200VA
	Max. grid output current	ac,19.1A
	Max. grid input apparent power	26400VA
	Max. grid input current	ac,38.2A
Back-up output port	Rated Back-up voltage	3W+N+PE,230/400V
	Rated Back-up frequency	50Hz/60Hz
	Max. Back-up output apparent power	13200VA
	Max. Back-up output current	ac,19.1A
General information	Adjustable cos (φ)	0.8ind...0.8cap
	Operating temperature range	-25.....+60℃
	Inverter topology	Non-Isolated
	Ingress protection	IP65
	Protective class	I
	Overvoltage category	II(PV),III(MAINS)



Made in China

invt

Hybrid Solar Inverter BD15KTR-RH3

PV input port	Max. PV input power	22.5kW
	Max. PV input voltage	dc,1000V
	MPPT voltage range	dc,180-850V
	Full Power MPPT voltage range	dc,620-850V
	Max. PV input current	dc,2*13A
	Isc PV(absolute maximum)	dc,2*25A
Battery input port	Rated battery voltage	400V
	Battery voltage range	125V-600V
	Rated battery charge /discharge current	dc,40/40A
	Max. battery charge /discharge current	dc,50/50A
	Battery type	Lithium-ion
Grid output/input port	Rated grid voltage	3W+N+PE,230/400V
	Rated grid frequency	50Hz/60Hz
	Rated output power	15000W
	Max. grid output apparent power	16500VA
	Max. grid output current	ac,23.8A
	Max. grid input apparent power	33000VA
	Max. grid input current	ac,47.6A
Back-up output port	Rated Back-up voltage	3W+N+PE,230/400V
	Rated Back-up frequency	50Hz/60Hz
	Max. Back-up output apparent power	16500VA
	Max. Back-up output current	ac,23.8A
General information	Adjustable cos (φ)	0.8ind...0.8cap
	Operating temperature range	-25.....+60℃
	Inverter topology	Non-Isolated
	Ingress protection	IP65
	Protective class	I
	Overvoltage category	II(PV),III(MAINS)



Made in China

2. Order

2.1. Date of Purchase Order, Customer's Reference

2021-08-02, 2022-07-15

2.2. Test Sample(s)

- Reception date(s): 2022-02-09, 2022-08-01
- Location(s) of reception: TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, P.R. China
- Condition of test sample(s): Intact

2.3. Date(s) of Testing

2022-05-09 to 2022-06-10, 2022-08-01 to 2022-08-15

2.4. Location(s) of Testing

TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, P.R. China

2.5. Points of Non-Compliance or Exceptions of the Test Procedure

- None

3. Test Results

- "Decision rule according to IEC Guide 115:2021, clause 4.4.3, 4.5.1 was applied."

3.1. Positive Test Results

Test specification(s)	Report no. / Rev. No.	Date	Remark
Electrical safety:	64.290.22.31025.01	2022-08-16	-

4. Remarks

4.1. General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2. Additional information for routine tests to be performed by the factory(ies)

Refer to CDF

4.3. The co-license certificate application is based on the following main license certificate:

Certificate No.: N8A 115385 0008 Rev. 00
Report No.: 64.290.21.30683.01
License holder: Shenzhen Megarevo Technology Co., Ltd.
Model No.: R6KH3, R8KH3, R10KH3, R12KH3, R15KH3
(for model BD6KTR-RH3, BD8KTR-RH3, BD10KTR-RH3, BD12KTR-RH3, BD15KTR-RH3 in co-license)

5. Documentation

- CDF
- Photo documentation

6. Summary

The test specifications are met.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch TÜV SÜD Group

Tested by:

Jenn Huang

printed name, function & signature

Approved by:

Symbol Zhao

printed name, function & signature



--- End of Report ---