Unit Certificate

Hoymiles Power Electronics Inc.
No.18 Kangjing Road, Hangzhou,
Zhejiang Province,
P.R.China

Type of equipment	Micro Storage System (type 2)			
Product Name	HB-4020-X, HB-4020-X-1, HB-4020-X-2, HB-4020-X-3 HB-4020-XM, HB-4020-XM-1, HB-4020-XM-2, HB-4020-XM-3 HB-4020-AC, HB-4020-AC-1, HB-4020-AC-2, HB-4020-AC-3 HB-4020-ACM, HB-4020-ACM-1, HB-4020-ACM-2, HB-4020-ACM-3			
Technical data	rated active power: maximum active power: max. apparent power: rated voltage: Rated current (AC): Initial short-circuit AC current:	P_{rE} P_{Emax} S_{Emax} U_r I_r I_k“	= 0.8-2.5 kW = 0.8-2.5 kW = 0.8-2.5 kVA = 230 V = 3.48-10.87 A = 3.48-10.87 A	
Certification scheme	P30VA01 Rev. 11/10.25	TÜV NORD Certification Process for Grid Integration Certification		
Network connection rule	VDE-AR-N 4105 2018-11	Generators connected to the low-voltage distribution network customer installations to the medium voltage network operation with low- voltage distribution networks		
Test requirement	DIN VDE V 0124-100 2020-06	Grid integration of generator plants - Low-voltage Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution networks		

The power generating units comply with the requirements of the network connection rule specified above, with a restriction. For further details and technical specifications, please refer to Annex 1, which consists of 5 pages.

Certificate Registration No. 4479823053476 valid from 2026-04-29
Evaluation Report No. 35421949 Type 1a Certificate

Essen, 2026-04-29
Rev. 1.0

Certification body of TÜV NORD CERT GmbH

TÜV NORD CERT GmbH
Am TÜV 1, 45307 Essen
Germany
www.tuev-nord-cert.com

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to the Unit Certificate with the Registration No. 4479823053476

Hoymiles Power Electronics Inc.
No.18 Kangjing Road, Hangzhou,
Zhejiang Province,
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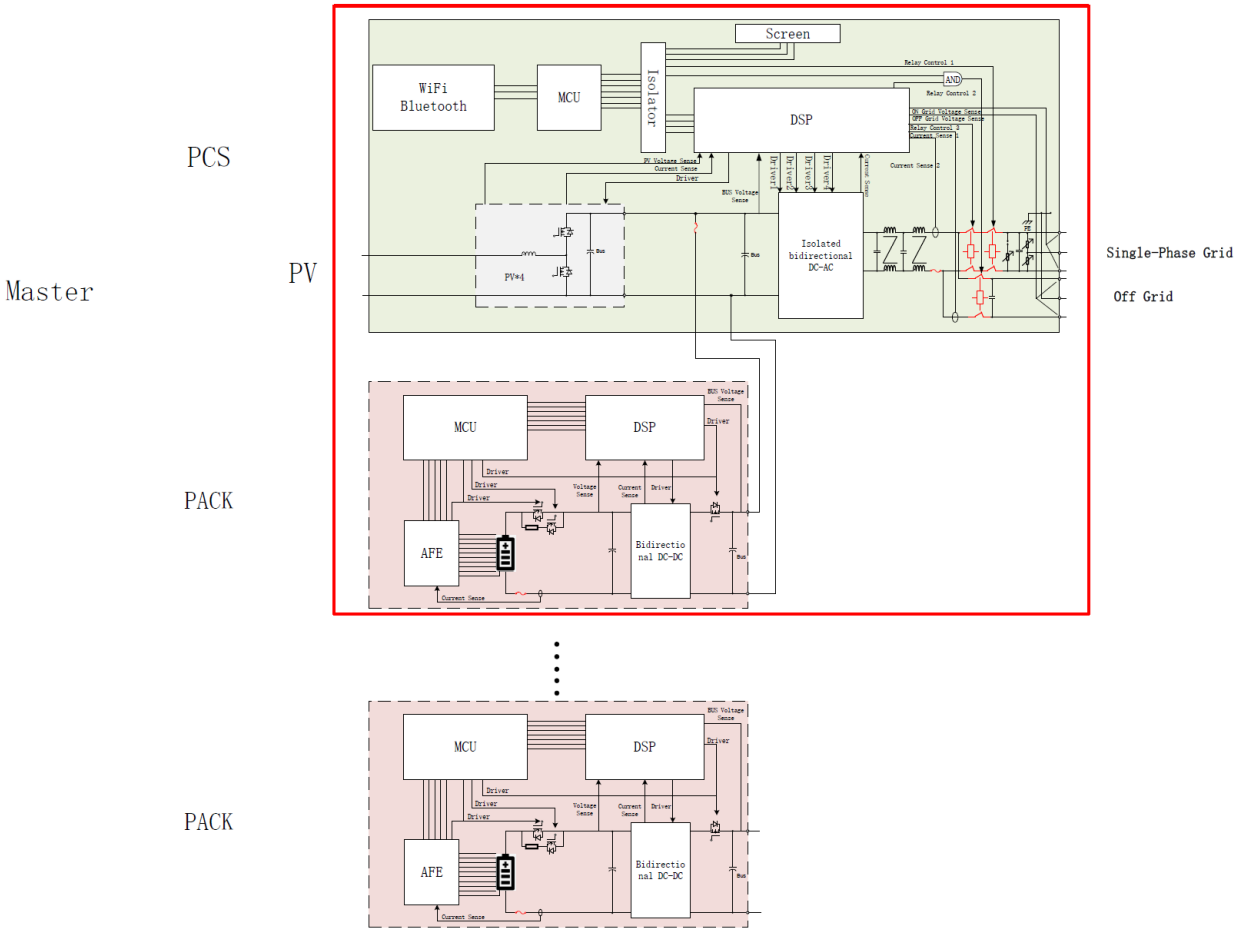
Schematic structure of the power generating units:

HB-4020-X, HB-4020-X-1, HB-4020-X-2, HB-4020-X-3,
HB-4020-XM, HB-4020-XM-1, HB-4020-XM-2, HB-4020-XM-3



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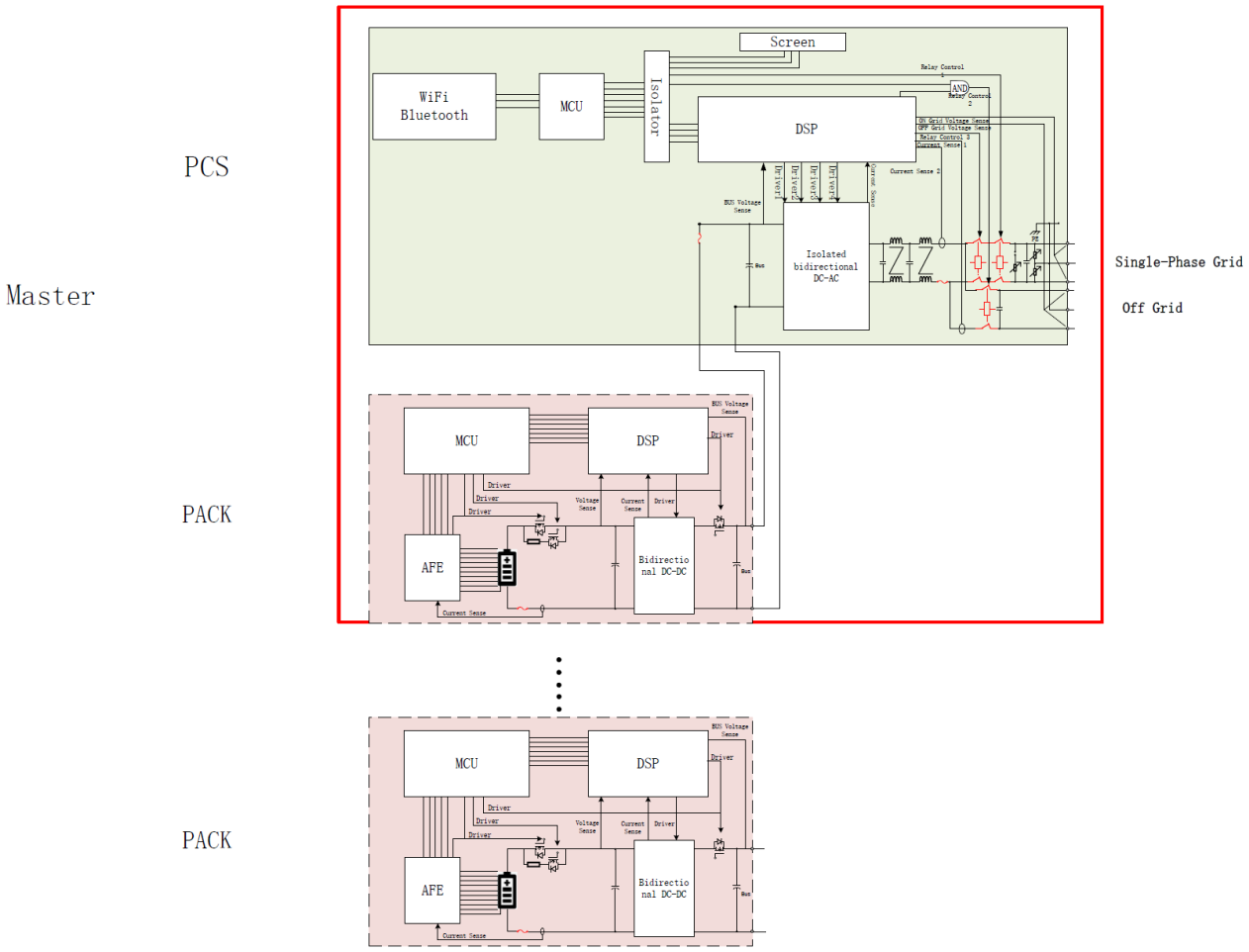
HB-4020-AC, HB-4020-AC-1, HB-4020-AC-2, HB-4020-AC-3,
HB-4020-ACM, HB-4020-ACM-1, HB-4020-ACM-2, HB-4020-ACM-3



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Technical data of the power generating units

General				
Type of EZE	Type 2 / Micro Storage System			
Designation	HB-4020-AC	HB-4020-ACM	HB-4020-X	HB-4020-XM
	HB-4020-AC-1	HB-4020-ACM-1	HB-4020-X-1	HB-4020-XM-1
	HB-4020-AC-2	HB-4020-ACM-2	HB-4020-X-2	HB-4020-XM-2
	HB-4020-AC-3	HB-4020-ACM-3	HB-4020-X-3	HB-4020-XM-3
On-grid variables				
Rated apparent power S_{rE}	800 VA 800VA(max)	2500 VA 2500VA(max)	800 VA 800VA(max)	2500 VA 2500VA(max)
Rated effective power P_{rE}	800 W 800 W (max)	2500 W 2500 W (max)	800 W 800 W (max)	2500 W 2500 W (max)
Max. effective power P_{Emax}	797.3 W (0.997 P_{Emax})	2480.6 W (0.992 P_{Emax})	797.3 W (0.997 P_{Emax})	2480.6 W (0.992 P_{Emax})
Max. apparent power S_{Emax}	797.8 VA (0.997 S_{Emax})	2498.6 VA (0.999 S_{Emax})	797.8 VA (0.997 S_{Emax})	2498.6 VA (0.999 S_{Emax})
Rated voltage U_r	230V			
Rated current I_r	3.48A	10.87A	3.48A	10.87A
Initial short-circuit alternating current $I_{"k}$	3.48A	10.87A	3.48A	10.87A
Reactive power adjustment range cos φ	＞0.99 (0.8 leading – 0.8 lagging)			
Rated frequency f_n	50Hz			
PV – Input Variables				
Min. MPP voltage	--		16 V	
Max. MPP voltage	--		60 V	
Max. DC input voltage	--		60 V	
Number of MPPT	--		4	

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Max. input current	--	4*32A
Isc PV	--	4*40A
Battery Variables		
Min. Battery voltage	11.2V	
Max. Battery voltage	14.6V	
Max. charge/discharge current	180A	
DC – Input variables		
Type /IGBT module	IKW40N120H3/IKW50N65ES5	
Quantity DC Link Capacitor	10	
Clock frequency	200MHz	
Type of power control	SPWM	
Max. Output current (only for IGBT)	17.4A	
Software versions	PCS: V01.00.08; PACK: V01.00.07; ARM: V1.00.01; WIFI: V1.00.01	
Generation unit Control		
Manufacturer	Hoymiles Power Electronics Inc.	
Software version	PCS: V01.00.08; PACK: V01.00.07; ARM: V1.00.01; WIFI: V1.00.01	
Protection device		
Manufacturer	XIAMEN HONGFA ELECTROACOUSTIC CO., LTD.	
Type	Integrated guard	
Switch-off unit (AC)	HF140FF-G	
Software versions	PCS: V01.00.08; PACK: V01.00.07; ARM: V1.00.01; WIFI: V1.00.01	

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Remarks

Additional technical data is given in the evaluation report (appendix A1).

The use of a modified software version is permitted if the changes to the above-mentioned software versions have been checked by TÜV NORD CERT GmbH. The validity of a new software version is confirmed to the manufacturer in writing. This confirmation then forms part of the certificate.

Quality Management System

The manufacturer has proven for the manufacturing facility of the power generating units a certification of its quality management system according to ISO 9001. The manufacturer confirmed in a manufacturer declaration that the certification of the management system will be valid parallel to the period of this unit certificate.

Restrictions

$P_{AV.E}$ monitoring function is not integrated in the unit. The function can be implemented according to the specifications of the VDE-AR-N 4105 Chapter 5.5.2 in a stand-alone equipment.

Please note that the HB-4020-X, HB-4020-X-1, HB-4020-X-2, HB-4020-X-3 HB-4020-XM, HB-4020-XM-1, HB-4020-XM-2, HB-4020-XM-3, HB-4020-AC, HB-4020-AC-1, HB-4020-AC-2, HB-4020-AC-3, HB-4020-ACM, HB-4020-ACM-1, HB-4020-ACM-2, HB-4020-ACM-3 does not have a display. As a result, the protection settings of the decoupling protection and the connection conditions cannot be read or set via a display on the component. As a result, a readout function must be implemented on the PGU.

Appendix to the Certificate

A1. Evaluation report no. 35421949 version 1.0

A2. Extracts from the test report VDE-AR-N 4105 Annex E.5
Dongguan BALUN Testing Technology Co., Ltd. Extract No. BL-DG2640057-201 A1 from Apr.13,2026

A3. Extracts from the test report VDE-AR-N 4105 Annex E.7
Dongguan BALUN Testing Technology Co., Ltd. Extract No. BL-DG2640057-201 A2 from Apr.13,2026

Essen, 2026-04-29

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