
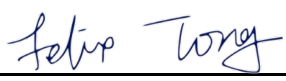



<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	CN23URZV 001	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	170351073	Seite 1 von 14 Page 1 of 14	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	-	<b>Auftragsdatum:</b> <i>Order date:</i>	2023.08.29		
<b>Auftraggeber:</b> <i>Client:</i>	FOSHAN SHUNDE ZEALUX ELECTRICAL APPLIANCES CO., LTD. No.2-8, No.9 Road, Science and Technology zone, Xingtan Industrial Park, Xingtan Town, Shunde District, 528325 Foshan City, Guangdong P.R. China				
<b>Prüfgegenstand:</b> <i>Test item:</i>	Heat pump space heater				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	XAH16Csi32T, ALSAVO HEAT 16iT				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	EU energy performance test				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	COMMISSION REGULATION (EU) No 813/2013 COMMISSION DELEGATED REGULATION (EU) No 811/2013				
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2023.08.08				
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003547394-001				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2023.08.08 – 2023.08.30				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	TÜV Rheinland (Guangdong) Ltd.				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>geprüft von:</b> <i>tested by:</i>	 Signed by: Felix Tong		<b>genehmigt von:</b> <i>authorized by:</i>	 Signed by: Stone Shi	
<b>Datum:</b> <i>Date:</i>	2023.08.30	<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2023.08.30		
<b>Stellung / Position:</b>	Project Engineer	<b>Stellung / Position:</b>	Reviewer		
<b>Sonstiges /</b> <i>Other:</i>	This report is only for heating capacity test and sound power level test.				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet	
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested	
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>					

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<b>Prüfbericht-Nr.:</b> CN23URZV 001 <i>Test report no.:</i>			
<b>Absatz</b> <i>Clause</i>	<b>Anforderungen - Prüfungen /</b> <i>Requirements - Tests</i>	<b>Messergebnisse – Bemerkungen/</b> <i>Measuring results - Remarks</i>	<b>Ergebnis</b> <i>Result</i>

<b>1</b>	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
<b>2</b>	<p>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.</p> <p><i>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</i></p>
<b>3</b>	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
<b>4</b>	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

<b>Testing results summary</b>		
Model designation	XAH16Csi32T	
Function	Heating (Average)	
Outlet temperature	35	55
Design load (kW)	12.05	12.25
Annual energy consumption (kWh)	5306	7500
Seasonal space heating energy efficiency	185	132
Energy class	A+++	A++
<b>Summary of testing</b>		
<ol style="list-style-type: none"> <li>1. The appliance was evaluated capacity test according to EN 14825:2013 and EN 14825:2022.</li> <li>2. The appliance was tested at outlet temperature 35°C and 55°C.</li> <li>3. The capacity test method is air enthalpy method.</li> <li>4. The appliance was evaluated sound power level test according to EN 12102:2013 and EN 12102-1:2022.</li> <li>5. All tests were performed on the model XAH16Csi32T.</li> <li>6. The test location is below.            For heating capacity test            TÜV Rheinland (Guangdong) Ltd.            No.199 Kezhu Road, Guangzhou Science City Guangzhou 510663 China            For sound power level test            CVC Testing Technology Co., Ltd.            No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, Guangdong, P.R. China</li> </ol>		
<b>Test sample particulars</b> .....		
Classification of installation and use .....	Fixed appliance	
Type of the appliance .....	Air to water heat pump	
Function of the appliance .....	Space heating or cooling	
Heating season (heating function applicable).....	Average	
<b>Possible test case verdicts:</b>		
- test case does not apply to the test object ..... : N/A		
- test object does meet the requirement ..... : P(Pass)		
- test object does not meet the requirement ..... : F(Fail)		
<b>Testing</b> .....		
Date of receipt of test item.....	See cover page	
Date (s) of performance of tests.....	See cover page	

**General product information**

1. The appliance is air to water heat pump for space heating or cooling which installed at outdoor.
2. The appliance incorporates water pump and crankcase heater for compressor.




Model description:




All models are identical to each other except for model name.

The information of compressor, fan motor and water pump are listed as below.

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Compressor	Guangzhou Meizhi Compressor Ltd.	KTF400D64UMTA	Rated Voltage: DC190V; 180Hz ;R32
Fan motor	Wolong Electric Group Co., Ltd.	ZWB378D02B	DC310V,8P, 120W,880r/min
Water pump	HEFEI XINHU CANNED MOTOR PUMP CO.,LTD	GPD25-8S	AC230V/50Hz 245W class H

**Rating labels and marking:**

<b>AIR SOURCE HEAT PUMP</b>	
Model	XAH16Csi32T
Rated heating capacity	16kW
Rated current	12A
Power supply	380-415V~ 50Hz
Advised water flux	2.8m <sup>3</sup> /h
Max. water pressure	0.3MPa
Water connection	G1"
Electric shock prevention	Class I
Waterproof protection	IPX4
Max. allowable pressure(discharge)	4.5MPa
Max. allowable pressure(suction)	1.5MPa
Refrigerant (R32)	2.4kg
CO2 equivalent	1.62tonnes
Net weight	109kg
FOSHAN SHUNDE ZEALUX ELECTRICAL APPLIANCES CO., LTD. No.2-8, No.9 Road, Science and Technology Zone, Xingtan Industrial Park, Xingtan Town, Shunde District, 528325 Foshan City, Guangdong P.R. China	
Contains fluorinated greenhouse gases. Hermetically sealed system.	
  	

<b>AIR SOURCE HEAT PUMP</b>	
Model	ALSAVO HEAT 16iT
Rated heating capacity	16kW
Rated current	12A
Power supply	380-415V~ 50Hz
Advised water flux	2.8m <sup>3</sup> /h
Max. water pressure	0.3MPa
Water connection	G1"
Electric shock prevention	Class I
Waterproof protection	IPX4
Max. allowable pressure(discharge)	4.5MPa
Max. allowable pressure(suction)	1.5MPa
Refrigerant (R32)	2.4kg
CO2 equivalent	1.62tonnes
Net weight	109kg
<p>FOSHAN SHUNDE ZEALUX ELECTRICAL APPLIANCES CO., LTD.            No.2-8, No.9 Road, Science and Technology Zone, Xingtan Industrial Park, Xingtan Town, Shunde District, 528325            Foshan City, Guangdong P.R. China</p>	
<p>Contains fluorinated greenhouse gases.            Hermetically sealed system.</p>	
  	

COMMISSION REGULATION (EU) No 813/2013 COMMISSION DELEGATED REGULATION (EU) No 811/2013			
Clause	Requirement - Test	Result - Remark	Verdict

<b>COMMISSION REGULATION (EU) No 813/2013</b>			
Article 1	Subject matter and scope		P
1	This Regulation establishes ecodesign requirements for the placing on the market and/or putting into service of space heaters and combination heaters with a rated heat output heater ≤ 400 kW including those integrated in packages of space heater, temperature control and solar device or packages of combination heater, temperature control and solar device as defined in article 2 of Commission Delegated Regulation (EU) No 811/2013.		P
2	This Regulation shall not apply to: (a) heaters specifically designed for using gaseous or liquid fuels predominantly produced from biomass; (b) heaters using solid fuels; (c) heaters within the scope of Directive 2010/75/EU of the European Parliament and of the Council; (d) heaters generating heat only for the purpose of providing hot drinking or sanitary water; (e) heaters for heating and distributing gaseous heat transfer media such as vapour or air; (f) cogeneration space heaters with a maximum electrical capacity of 50 kW or above. (g) heat generators designed for heaters and heater housings to be equipped with such heat generators placed on the market before 1 January 2018 to replace identical heat generators and identical heater housings. The replacement product or its packaging shall clearly indicate the heater for which it is intended.		N/A
Article 3	Ecodesign requirements and timetable		P
1	The ecodesign requirements for heaters are set out in Annex II.		P
2	Each ecodesign requirement shall apply in accordance with the following timetable:		P
	(a) from 26 September 2015: (i) heaters shall meet the requirements set out in Annex II, points 1(a), 3 and 5; (ii) combination heaters shall meet the requirements set out in Annex II, point 2(a);		N/A



COMMISSION REGULATION (EU) No 813/2013 COMMISSION DELEGATED REGULATION (EU) No 811/2013													
Clause	Requirement - Test											Result - Remark	Verdict
	(a) from 26 September 2017: (i) electric space heaters, electric combination heaters, cogeneration space heaters, heat pump space heaters and heat pump combination heaters shall meet the requirements set out in Annex II, point 1(b); (ii) combination heaters shall meet the requirements set out in Annex II, point 2(b);												P
	(a) from 26 September 2018 heaters shall meet the requirements set out in Annex II, point 4(a).												N/A
3	Compliance with ecodesign requirements shall be measured and calculated in accordance with the requirements set out in Annex III.												P
Annex II	Ecodesign requirements												P
1	Requirements for seasonal space heating energy efficiency												P
	(a) From 26 September 2015 the seasonal space heating energy efficiency and useful efficiencies of heaters shall not fall below the following values:												N/A
	- Heat pump space heaters and heat pump combination heaters, with the exception of low-temperature heat pumps: 100%												N/A
	- Low-temperature heat pumps: 115%												N/A
	(b) From 26 September 2017 the seasonal space heating energy efficiency and useful efficiencies of heaters shall not fall below the following values:												P
	- Heat pump space heaters and heat pump combination heaters, with the exception of low-temperature heat pumps: 110%												P
	- Low-temperature heat pumps: 125%												P
2	Requirements for water heating energy efficiency												N/A
	(a) From 26 September 2015 the water heating energy efficiency of combination heaters shall not fall below the following values:												N/A
	Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	-	
	Water heating energy efficiency	22%	23%	26%	26%	30%	30%	30%	32%	32%	32%		
	(a) From 26 September 2017 the water heating energy efficiency of combination heaters shall not fall below the following values:												N/A



COMMISSION REGULATION (EU) No 813/2013													
COMMISSION DELEGATED REGULATION (EU) No 811/2013													
Clause	Requirement - Test											Result - Remark	Verdict
	Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	-	
	Water heating energy efficiency	32%	32%	32%	32%	36%	37%	38%	60%	64%	64%	-	
3	Requirements for sound power level											P	
	From 26 September 2015 the sound power level of heat pump space heaters and heat pump combination heaters shall not exceed the following values:											P	
	Rated heat output ≤ 6 kW		6 kW < Rated heat output ≤ 12 kW		12 kW < Rated heat output ≤ 30 kW		30 kW < Rated heat output ≤ 70 kW					-	
	indoor	outdoor	indoor	outdoor	indoor	outdoor	indoor	outdoor	indoor	outdoor			
	60 dB	65 dB	65 dB	70 dB	70 dB	78 dB	80 dB	88 dB					
4	Requirements for emissions nitrogen oxides											N/A	
5	Requirements for product information											N/A	
	From 26 September 2015 the following product information on heaters shall be provided:											N/A	
	(a) the instruction manuals for installers and end-users, and free access websites of manufacturers, their authorised representatives and importers shall contain the following elements:											N/A	
	- For heat pump heaters and heat pump combination heaters, the technical parameters set out in Table 2, measured and calculated in accordance with Annex III;											N/A	
	- Any specific precautions that shall be taken when the heater is assembled, installed or maintained;											N/A	
	- Information relevant for disassembly, recycling and/or disposal at end-of-life;											N/A	
Annex III	Measurements and calculations											P	

**COMMISSION DELEGATED REGULATION (EU) No 811/2013**

Annex II	Energy efficiency classes											P
1	Seasonal space heating energy efficiency classes											P

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COMMISSION REGULATION (EU) No 813/2013 COMMISSION DELEGATED REGULATION (EU) No 811/2013			
Clause	Requirement - Test	Result - Remark	Verdict
	The seasonal space heating energy efficiency class of a heater, with the exception of low-temperature heat pumps and heat pump space heaters for low-temperature application, shall be determined on the basis of its seasonal space heating energy efficiency as set out in Table 1.		P
	The seasonal space heating energy efficiency class of a low-temperature heat pumps and a heat pump space heaters for low-temperature application shall be determined on the basis of its seasonal space heating energy efficiency as set out in Table 2.		P
	The seasonal space heating energy efficiency of a heater shall be calculated in accordance with point 3 and 4 of Annex VII, for heat pump space heaters, heat pump combination heaters and low-temperature heat pumps under average climate conditions.		P
2	Water heating energy efficiency classes		N/A
	The water heating energy efficiency class of a combination heater shall be determined on the basis of its water heating energy efficiency as set out in Table 3.		N/A
	The water heating energy efficiency of a combination heater shall be calculated in accordance with point 5 of Annex VII.		N/A

**Measurements and calculations**

Outlet temperature °C	35								
Outlet temperature type	<input type="checkbox"/> Fixed outlet <input checked="" type="checkbox"/> Variable outlet								
Test result	Test condition								
	A	B	C	D	E	F			
Inlet dry bulb temperature for outdoor air °C	-6.98	2.03	7.00	12.02	-10.00	-6.98			
Inlet wet bulb temperature for outdoor air °C	-8.15	1.04	6.00	10.98	-10.97	-8.15			
Inlet temperatures for indoor °C	30.73	27.94	25.69	22.58	32.15	30.73			
Outlet temperatures for indoor °C	34.03	30.00	27.02	23.94	35.30	34.03			
Measured capacity W	10710	6660	4295	4397	10155	10710			
Measured power input W	3490	1520	788	621	3746	3490			
Water volume flow rate m <sup>3</sup> /h	2.78	2.78	2.78	2.78	2.78	2.78			
Static pressure difference kPa	27.6	28.2	27.8	27.7	27.4	27.6			
Measured power input of compressor off state W	12	12	12	12	12	12			
Compressor frequency for inverter type (Hz)	66	30	17	15	70	66			
Corrections of the power input of liquid pump if applicable									
P <sub>hydrau</sub> W	21	22	21	21	21	21			
Efficiency of the pump	0.31	0.31	0.31	0.31	0.31	0.31			
Capacity correction W	48	49	49	48	48	48			
Power input correction W	70	71	70	70	69	70			
Effective capacity W	10662	6611	4246	4349	10107	10662			
Effective power input W	3420	1449	718	551	3677	3420			
Calculated COP	3.12	4.56	5.91	7.89	2.75	3.12			
Electric power consumption during thermostat-off mode, standby mode, crankcase heater mode and off mode									
Off mode kW	0.012								
Thermostat-off mode kW	0.012								
Standby mode kW	0.012								
Crankcase heater mode kW	0.036								
Calculations for seasonal space heating energy efficiency									
Test condition	Outdoor heat exchanger	Indoor heat exchanger	Part Load Ratio %	Part Load kW	Tested Capacity kW	Tested COP	Cc	CR	COP at A, B, C, D, E, F condition
	Outdoor air °C	Outlet water temperature °C							
A	-7	34	88.46%	10.66	10.662	3.12	1.00	1.00	3.12
B	2	30	53.85%	6.49	6.611	4.56	0.99	1.00	4.56

C	7	27	34.62%	4.17	4.246	5.91	0.98	1.00	5.91
D	12	24	15.38%	1.85	4.349	7.89	0.98	0.43	7.67
E	-10	35.3	100.00%	12.05	10.107	2.75	1.00	1.00	2.75
F	-7	34	88.46%	10.66	10.662	3.12	1.00	1.00	3.12
SCOPon	4.70			SCOPnet		4.74			
SCOP	4.69								
$\eta_s$	185								

Outlet temperautre °C	55					
Outlet temperautre type	<input type="checkbox"/> Fixed outlet <input checked="" type="checkbox"/> Variable outlet					
Test result	Test condition					
	A	B	C	D	E	F
Inlet dry bulb temperature for outdoor air °C	-6.99	1.99	7.04	12.00	-10.01	-6.99
Inlet wet bulb temperature for outdoor air °C	-8.13	1.02	5.99	11.01	-11.01	-8.13
Inlet temperatures for indoor °C	46.09	38.33	33.67	27.70	49.74	46.09
Outlet temperatures for indoor °C	52.04	41.95	35.99	30.01	55.30	52.04
Measured capacity W	10860	6752	4271	4241	10143	10860
Measured power input W	5427	1995	1046	742	6558	5427
Water volume flow rate m <sup>3</sup> /h	1.59	1.59	1.59	1.59	1.59	1.59
Static pressure difference kPa	11.8	11.7	11.0	10.4	11.1	11.8
Meausred power input of compressor off state W	12	12	12	12	12	12
Compressor frequency for inverter type (Hz)	77	32	18	15	90	77
Corrections of the power input of liquid pump if applicable						
P <sub>hydrau</sub> W	5	5	5	5	5	5
Efficiency of the pump	0.18	0.18	0.17	0.17	0.17	0.18
Capacity correction W	24	24	23	22	23	24
Power input correction W	29	29	28	27	28	29
Effective capacity W	10836	6728	4248	4219	10120	10836
Effecitve power input W	5398	1966	1018	715	6530	5398
Calculated COP	2.01	3.42	4.17	5.90	1.55	2.01
Electric power consumption during thermostat-off mode, standby mode, crankcase heater mode and off mode						
Off mode kW	0.012					
Thermostat-off mode kW	0.012					
Standby mode kW	0.012					
Crankcase heater mode kW	0.036					

Calculations for seasonal space heating energy efficiency									
Test condition	Outdoor heat exchanger	Indoor heat exchanger	Part Load Ratio %	Part Load kW	Tested Capacity kW	Tested COP	Cc	CR	COP at A, B, C, D, E, F condition
	Outdoor air °C	Outlet water temperature °C							
A	-7	52	88.46%	10.84	10.836	2.01	1.00	1.00	2.01
B	2	42	53.85%	6.60	6.728	3.42	0.99	1.00	3.42
C	7	36	34.62%	4.24	4.248	4.17	0.99	1.00	4.17
D	12	30	15.38%	1.88	4.219	5.90	0.98	0.45	5.78
E	-10	55.3	100.00%	12.25	10.120	1.55	1.00	1.00	1.55
F	-7	52	88.46%	10.84	10.836	2.01	1.00	1.00	2.01
SCOPon	3.38			SCOPnet		3.40			
SCOP	3.37								
$\eta_s$	132								

Test result	Indoor unit	Outdoor unit
Sound power level dB(A)	-	67.1

**Photo**



Picture 1 alternative appearance

End of report