Certificate

Applicant: **TELE Haase Steuergeräte Ges.m.b.H**
Vorarlberger Allee 38
1230 Wien
Austria

Product: **Automatic disconnection device**

Model:	**NA003**

Intended use:

An automatic disconnection device with three-phase mains surveillance in accordance with Engineering Recommendation G59/3 for systems with a three-phase parallel coupling to the public mains supply.

Applied standards and guidelines:

Engineering Recommendation G83/2
Issue 2 – August 2012
Recommendations for the connection of small-scale embedded generators in parallel with public low-voltage distribution networks.

The safety concept of an aforementioned representative product corresponds at the time of issue of this certificate to the valid safety specifications for the specified use in accordance with regulations.

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DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-12089-01-01

Andreas Aufmuth
Certification Department

CERTIFICATION primara Test- und Zertifizier-GmbH Grid Code Compliance G83/2

Protection. Frquency Tests.

Function	Setting		Trip test		No trip test	
	Frequency	Time delay	Frequency	Time delay	Frequency time	Confirm no trip
U/F stage 1	47,5Hz	20s	47,50Hz	20,13s	47,7Hz 25s	No trip
U/F stage 2	47,0Hz	0,5s	47,00Hz	0,65s	47,2Hz 19,98s	No trip
					46,8Hz 0,48s	No trip
O/F stage 1	51,5Hz	90s	51,50Hz	90,20s	51,3Hz 95s	No trip
O/F stage 2	52,0Hz	0,5s	52,01Hz	0,62s	51,8Hz 89,98s	No trip
					52,2Hz 0,48s	No trip

Protection. Voltage Tests.

Function	Setting		Trip test		No trip test	
	Voltage	Time delay	Voltage	Time delay	Voltage time	Confirm no trip
U/V stage 1	200,1V	2,5s	200,1V	2,57s	204,1V 3,5s	No trip
U/V stage 2	184,0V	0,5s	183,9V	0,58s	188V 2,48s	No trip
					180V 0,48s	No trip
O/V stage 1	262,2V	1,0s	262,2V	1,07s	258,2V 2,0s	No trip
O/V stage 2	273,7V	0,5s	273,6V	0,58s	269,7V 0,98s	No trip
					277,7V 0,48s	No trip

Loss-of-Mains (LOM) Protection Tests. RoCoF

Calibration and Accuracy Tests

Ramp in range 49,5 – 50,5Hz	Pickup (±0,005Hzs^{-1})				Time Delay RoCoF = ±0,05Hz/s above setting			
Setting =0,20Hzs^{-1}	Lower Limit	Measured value	Upper Limit	Result	Test Condition	Measured value	Upper Limit	Result
Increasing Frequency	0,195	0,195	0,205	P	0,25Hzs^{-1}	458ms	<0,5s	P
Reducing Frequency	0,195	0,195	0,205	P	0,25Hzs^{-1}	472ms	<0,5s	P

Stability Tests

	Change	Test duration	Confirm no trip
Positive frequency drift	Higher of 0,12Hz/s or RoCoF -0,01Hz/s	5,0s	No trip
Negative frequency drift		5,0s	No trip

Loss-of-Mains (LOM) Protection Tests. Vector Shift

Calibration and Accuracy Tests

Vector shift	Pickup (±0,005Hzs^{-1})				Time Delay RoCoF = ±0,05Hz/s above setting			
Setting = 12 degrees	Lower Limit	Measured value	Upper Limit	Result	Test condition	Measured value	Upper Limit	Result
Vector shift: Lagging Angle	11,5	12,0	12,5	P	14 deg	169,4ms	<0,5s	P
Vector shift: Leading Angle	11,5	-12,0	12,5	P	14 deg	174,0ms	<0,5s	P

Stability Tests

	Change	Test duration	Confirm no trip
Positive vector shift	Higher of 5 degrees or vector shift -1 degree	30s	No trip
Negative vector shift		30s	No trip

Protection. Reconnection Timer.

Reconnestion Time	**Under / Over voltage**		**Under / over frequency**		**Loss of mains**	
Minimum value	20 seconds					
Actual settings (sec)	20s		20s		20s	
Recorded value (sec)	20,18s		20,18s		20,18s	
	At 266,2V		At 196,1V		At 47,4Hz	At 51,6Hz
Confirmation that the unit does not re-connect.	No re-connection		No re-connection		No re-connection	No re-connection