



CERTIFICATE

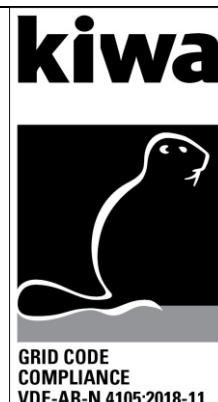


Certificate of NS protection		Nr.: 22-010-00
Manufacturer / Applicant	Studer Innotec SA Rue de Casernes 57 1950 Sion Switzerland	
Type of NS protection	Assigned to power generation unit of type nx3 16000-48 st and nx3 16000-48 t	
Central NS protection	<input type="checkbox"/>	
Integrated NS protection	<input checked="" type="checkbox"/>	Assigned to power generation unit of type nx3 16000-48 st and nx3 16000-48 t
Network connection rule	SOP-9-1_15 GCC Certification Program, 09/21 <u>Based on:</u> VDE-AR-N 4105:2018-11 Generators connected to the low-voltage distribution network – Technical minimum requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Test requirement	DIN VDE V 0124-100 (VDE V 0124-100):2020-06 “Network integration of power generation systems – Low voltage” Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network	
Test Report	21PP474-01_1 from 2022-01-12	
The network and system protection designated above meets the requirements of VDE-AR-N 4105:2018-11.		

Kaufbeuren, 2022-01-19

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Certification Engineer



This NS protection certificate shall not be used in extracts



Annex 1

E.7 Extract of the test report for NS protection „Determination of electrical properties“				No.: 21PP474-01_1		
Test report NS protection						
Type of NS protection	Assigned to power generation unit of type nx3 16000-48 st and nx3 16000-48 t				Further manufacturer indications	
Software-Version:	0.4.14.0					
Manufacturer:	Studer Innotec SA Rue de Casernes 57 1950 Sion Switzerland					
Measurement period:	2021-10-20					
		Siting generators, fuel cells			Inverter(s)	
		Synchronous and asynchronous generators with $P_n \leq 50\text{kW}$ coupled directly or via inverters			Directly coupled synchronous and asynchronous generators with $P_n > 50\text{kW}$	
Protective function	Set Value	Tripping Value	Tripping time NS Protection*	Set Value	Tripping Value	Tripping time NS Protection*
Rise-in-voltage protection U>>	1,15 * U_n	* U_n	ms	1,25 * U_n	287,6V	136ms
Rise-in-voltage protection U>	1,10 * U_n	* U_n	ms	1,10 * U_n	253,0V	10min
Voltage drop protection U<	0,8 * U_n	* U_n	ms	0,8 * U_n	184,5V	3,03s
Voltage drop protection U<<	entfällt			0,45 * U_n	103,5V	362ms
Frequency decrease protection f<	47,5Hz	Hz	* U_n	47,5 Hz	47,5Hz	126ms
Frequency decrease protection f>	51,5Hz	Hz	* U_n	51,5 Hz	51,5Hz	124ms
* The tripping time includes the period from the limit value violation U_f until the tripping signal to the interface switch.						
When planning the power generation system, the response time of the interface switch shall be added to the maximum time value obtained as indicated above.						
<input checked="" type="checkbox"/> For integrated NS protection						
Assigned to power generation unit of type					nx3 16000-48 st / nx3 16000-48 t	
Type integrated interface switch					Relais	
Response time of interface switch for integrated NS protection					40,0ms	
Verification of the entire functional chain "integrated NS protection – interface switch"					<input checked="" type="checkbox"/> has resulted in successful disconnection	