



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

No.: 21PP474-01_1

„Determination of electrical properties“

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	

	Sitriling 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_{lf} 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.

☒ 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" has resulted in successful disconnection	<input checked="" type="checkbox"/>