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DAkkS Deutsche Akkreditierungsstelle D-ZE-11321-01-00

TÜV SÜD Product Service

Certificate of Conformity

No. ESY 002360 0006 Rev. 00

Holder of Certificate: **Fronius International GmbH**
Fronius Straße 1
4643 Pettenbach
AUSTRIA

Product: **PV inverter**

Model(s):
Argeno 125
Argeno 125 EXC.
Argeno 125 AFCI
Argeno 125 AFCI EXC.
Argeno 125 FR
Argeno 125 FR EXC.
Argeno 125 UA
Argeno 125 UA EXC.

Parameters: see next pages

Applicable standards:
EN 50549-1:2019
EN 50549-10:2022

This Certificate of Conformity confirms the compliance with the above listed standards on a voluntary basis. It refers only to the sample submitted to TÜV SÜD Product Service GmbH and does not certify the quality or safety of the serial products. It was issued according to TÜV SÜD Product Service certification program Photovoltaics and Grid Integration. For details see: www.tuvsud.com/ps-cert

Test report no.: 713342036-07

Date, 2025-03-04

(Bernd Kreitmeier)

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EN 50549-1:2019
Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network - Generating plants up to and including Type B

Test report of the specifications	No. 713342036-07

Applicant	Fronius International GmbH Froniusstraße 1 4643 Pettenbach, Austria
Manufacturer	Fronius International GmbH Froniusstraße 1 4643 Pettenbach, Austria

Software-Version:	AC-DSP1: V1.11 (28B8) and higher
Measurement period:	2023-08-31 to 2024-06-24, 2024-11-29 to 2024-12-13
Tested according to:	EN 50549-10:2022 Considering EN 50549-1:2019

Additional information:

The PCE is a photovoltaic inverter without galvanic separation converting DC voltage in AC voltage. The input is connected via solar-connectors and provides 10 MPP-trackers whereas two of them can be connected. The PV-disconnector is integral part of the PCE.

- The model Argeno 125 provide pluggable SPDs at the AC and DC inputs.
- The model Argeno 125 AFCI provide pluggable SPDs and include an arc fault detection according to IEC 63027:2023.
- The model Argeno 125 FR include pluggable SPDs and additional insulation foils in the DC area. In addition, this variant uses a Ph-N measurement. An N conductor is a mandatory requirement for this device.
- The model Argeno 125 UA is identical to the model Argeno 125, except for the type plate in Cyrillic
- The models with the suffix EXC. are exchange devices (pool devices) for servicing. These are identical to the corresponding variants without this suffix.

The mains is connected via bus-bars and provides an integral disconnection according IEC 62109-2 Ed 1.0.

The internal switches can be controlled via an interface from the external interface protection. In this case, a delay time of <3 ms was determined.

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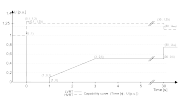
EN 50549-1:2019/A1:2023 - Annex C Parameter Table for default setting "Europe 50549-1:2019/A1:2023"					
(Sub-)Clause(s) of EN 50549-1:2019/A1:2023	**Ref**	**Parameter [a]**	**configurable value range**	**default value**	
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch required	The inverter has two build in switches in series which can be controlled by the protection function or an external protection device.	--	
4.4.2 Operating frequency range	A,B	47,0 – 47,5 Hz Duration	Not configurable, only protection settings	Unlimited	
	A,B	47,5 – 48,5 Hz Duration	Not configurable, only protection settings	Unlimited	
	A,B	48,5 – 49,0 Hz Duration	Not configurable, only protection settings	Unlimited	
	A,B	49,0 – 51,0 Hz Duration	not configurable	Unlimited	
	A,B	51,0 – 51,5 Hz Duration	Not configurable, only protection settings	Unlimited	
	A,B	51, 5 – 52 Hz Duration	Not configurable, only protection settings	Unlimited	
4.4.3 Minimal requirement for active power delivery at underfrequency	A,B	Reduction threshold	not configurable	No reduction due to underfrequency	
	A,B	Maximum reduction rate	not configurable	0 P_M/Hz	
4.4.4 Continuous operating voltage range	n.a.	Upper limit	not configurable	115 % U_c	
	n.a.	Lower limit	not configurable	75 % U_c	
4.5.2 Rate of change of frequency (ROCOF) immunity	A,B	ROCOF withstand capability (defined with a sliding measure-ment window of 500 ms)	not configurable	6 Hz/s	
4.5.3.2 Under-voltage ride through (UVRT) Generating plant with non-synchronous generating technology	B	Maximum power resumption time	not configurable	<150 ms	
	B	Voltage-Time-Diagram	see FRT capability curve in the manual 	Time [s]	U [p.u.]
				0	0,0
				1	0,0
				1	0,1
				3	0,5
				30	0,5
				30	0,75
4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s]	U [p.u.]
				0	1,25

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				30	1,25
				30	1,15
4.5.5 Phase jump immunity	n.a.	Phase jump immunity	not configurable	$\pm\delta_{2.1}$ = 90	$\pm\delta_{2.2}$ = 180
4.6.1 Power response to overfrequency	A,B	Threshold frequency f1	50,2 Hz– 52 Hz	50,2 Hz	
	A,B	Droop	2% – 12%	5 %	
	A,B	Power reference	P_M | P_{max}	P_M	
	n.a.	Intentional delay	0 – 2 s	0 s	
	n.a.	Deactivation threshold fstop	50,0 Hz – f_1	Deactivated	
	n.a.	Deactivation time tstop	0 – 600 s	--	
	A	Acceptance of staged disconnection	yes | no	No randomized disconnection implemented, Only protection functions	
4.6.2 Power response to underfrequency	n.a.	Threshold frequency f1	49,8 Hz– 46 Hz	49,8 Hz	
	n.a.	Droop	2 – 12%	5 %	
	n.a.	Power reference	P_M | P_{max}	P_{max}	
	n.a.	Intentional delay	0 – 2 s	0 s	
4.7.2.2 voltage support by reactive power - Capabilities	B	Active factor / Reactive power (%Pd) range overexcited	0,3 – 1 (cos φ setp.) 0 - 100 % P_D (Q setp.)	0,8 - 1 (cos φ setp.) 0 - 60 % P_D (Q setp.)	
	B	Active factor / Reactive power (%Pd) range underexcited	0,3 – 1 (cos φ setp.) 0 - 100 % P_D (Q setp.)	0,8 - 1 (cos φ setp.) 0 - 60 % P_D (Q setp.)	
4.7.2.3 voltage support by reactive power - Control modes	n.a.	Enabled control mode	Q setp. Q(U) Q(P) cos φ setp. cos φ (P)	Q setp	
4.7.2.3.2 voltage support by reactive power - Set point control modes	n.a.	Q setpoint and excitation	0 – 100 % P_D	0	
	n.a.	cos φ setpoint and excitation	0,3 – 1	1	
4.7.2.3.3 voltage support by reactive power - Voltage related control modes	n.a.	Characteristic curve	4 curves with up to 10 nodes are selectable, with Q from 0 % - 100 % and U from 0 % - 125 %	U [%]	Q [%]
				90	43,6 o.e.
				92	0
				100	0
				108	0
				110	43,6 u.e.
	n.a.	Time constant	3 s – 60 s (selectable as 5 tau settling time from 15 s – 300 s)	10 s (as 5 Tau settling time = 50 s)	
	n.a.	Min cos φ	0,0 – 1	0,9	
	n.a.	Lock in power	0 % – 100 %	0	
	n.a.	Lock out power	0 % – 100 %	0	
4.7.2.3.4 voltage support by reactive power - Power	n.a.	Characteristic curve	Up to 10 nodes are selectable with cos	P [p.u.]	cos φ

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related control mode			φ 0,3 - 1 and P 0 % - 100 %	0	1
				0,5	1
				1	0,9
4.7.4.2.2 Zero current mode for converter connected generating technology / Generating Plant with non-synchronous generator	n.a.	Enabling	enable | disable	Disabled	
	n.a.	Static voltage range overvoltage	100 % U_c – 125 % U_c	125 % U_c	
	n.a.	Static voltage range undervoltage	0 % U_c – 100 % U_c	10 % U_c	
4.9.3 Requirements on voltage and frequency protection	B	Undervoltage threshold stage 1	0,2 U_n – 1 U_n	0,80 U_n	
	B	Undervoltage operate time stage 1	0 s – 100 s	1 s	
	B	Undervoltage threshold stage 2	0,2 U_n – 1 U_n	0,45 U_n	
	B	Undervoltage operate time stage 2	0 s – 5 s	0,3 s	
	B	Overvoltage threshold stage 1	1,0 U_n – 1,2 U_n	1,10 U_n	
	B	Overvoltage operate time stage 1	0 s – 100 s	20 s	
	B	Overvoltage threshold stage 2	1,0 U_n – 1,30 U_n	1,148 U_n	
	B	Overvoltage operate time stage 2	0 s – 5 s	0,1 s	
	B	Overvoltage threshold 10 min mean protection	1,0 U_n – 1,15 U_n	1,15 U_n	
	B	Underfrequency threshold stage 1	47,0 Hz– 50,0 Hz	47,50 Hz	
	B	Underfrequency operate time stage 1	0 s – 100 s	0,1 s	
	B	Underfrequency threshold stage 2	47,0 Hz– 50,0 Hz	47,50 Hz	
	B	Underfrequency operate time stage 2	0 s – 5 s	0,1 s	
	B	Overfrequency threshold stage 1	50,0 Hz– 52,0 Hz	51,50 Hz	
	B	Overfrequency operate time stage 1	0 s – 100 s	0,1 s	
	B	Overfrequency threshold stage 2	50,0 Hz – 52,0 Hz	51,50 Hz	
	B	Overfrequency operate time stage 2	0 s – 5 s	0,1 s	

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	B	RoCoF protection	0,1 Hz/s – 6 Hz/s	deactivated
	B	RoCoF protection operating time	100 ms – 5000 ms	deactivated
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47,0 Hz– 50,0 Hz	49,50 Hz
	B	Upper frequency	50,0 Hz– 52,0 Hz	50,20 Hz
	B	Lower voltage	50% U_n – 100% U_n	85% U_n
	B	Upper voltage	100% U_n – 120 U_n	110% U_n
	B	Observation time	10 s – 600 s	60 s
	B	Active power increase gradient	6% –3000%/min	10 %/min
4.10.3 Starting to generate electrical power	A,B	Lower frequency	47,0 Hz– 50,0 Hz	49,50 Hz
	A,B	Upper frequency	50,0 Hz– 52,0 Hz	50,10 Hz
	A,B	Lower voltage	50% U_n – 100% U_n	85% U_n
	A,B	Upper voltage	100% U_n – 120 U_n	110% U_n
	A,B	Observation time	10 s – 600 s	60 s
	A,B	Active power increase gradient	6% – 3000%/min	Disabled
4.11.1 Ceasing active power	A,B	Remote operation of the logic interface	Via inverter off signal the inverter cease to energize within 5ms, must be activated in the HMI	Disabled
4.11.2 Reduction of active power on set point	B	Remote operation NOTE: If yes further definition is provided by the DSO	Via Ehternet or RS485	Disabled
4.12 Remote information exchange	B	Remote information exchange required NOTE: If yes further definition is provided by the DSO	Via Ehternet or RS485	Disabled

The Column Ref specifies if a parameter is relevant for COMMISION REGULATION 2016/631 and for what type of generating module the parameter is relevant. If n.a. is set, this parameter is: not applicable for 2016/631, but is introduce for EN50549-1 for local DSO network management reasons and is not considered as cross border issues.

Unauthorized access to factory safety parameters setting and software should be prohibited.

A reset to the factory safety parameters required retesting and verification in conjuction with the end-use system.