



Danfoss Solar Inverters A/S

Jyllandsgade 28,
DK-6400 Sønderborg, Denmark
CVR No.: 26 84 36 26

Ph.: +45 7488 1300
Fax: +45 7488 1301

E-mail: solar-inverters@danfoss.com
Homepage: www.solar-inverters.danfoss.com

Declaration of Country Dependent Functional Safety Settings

**Danfoss Solar Inverters A/S
Power Electronics Division
Jyllandsgade 28
DK-6400 Sønderborg
Denmark**

Declares the below product lines;

TLX 10k
TLX 12.5k
TLX 15k

cannot differ in the value settings concerning grid surveillance and residual current monitoring stated on page 2, except when country is set to "custom".

Date	
2010-04-27	
	Uffe Borup Senior Manager of Technology M.SC.E.E, Ph.D.

	Under voltage (stage 2)		Under voltage (stage 1)		10-minute mean voltage		Over voltage (stage 1)		Over voltage (stage 2)	
	Trip setting [V]	Clearance time [m s]	Trip setting [V]	Clearance time [m s]	Trip setting [V]	Clearance time [m s]	Trip setting [V]	Clearance time [m s]	Trip setting [V]	Clearance time [m s]
Austria	N.A	N.A	196	200	253	200	255	200	N.A	N.A
Belgium	N.A	N.A	184	200	N.A	N.A	264	200	N.A	N.A
Czech Rep.	N.A	N.A	196	200	N.A	N.A	254	200	N.A	N.A
Denmark	N.A	N.A	196	1500	253	200	253	1500	N.A	N.A
France	N.A	N.A	184	200	N.A	N.A	264	200	N.A	N.A
Germany	N.A	N.A	184	200	253	200	264	200	N.A	N.A
Greece	N.A	N.A	184	500	N.A	N.A	264	500	N.A	N.A
Italy	N.A	N.A	184	200	N.A	N.A	276	100	N.A	N.A
Luxembourg	N.A	N.A	184	200	253	200	264	200	N.A	N.A
Malta	N.A	N.A	207	1500	N.A	N.A	264	1500	N.A	N.A
Netherlands	115	100	196	2000	253	200	253	200	300	50
Portugal	115	100	196	2000	253	200	253	200	300	50
Spain	N.A	N.A	196	1000	253	200	253	1000	N.A	N.A
Sweden	196	200	207	60000	243	200	243	60000	264	200
Switzerland	N.A	N.A	184	200	253	200	264	200	N.A	N.A
Turkey	N.A	N.A	203	50	233	200	233	50	N.A	N.A
Germany MV	104	300	184	1000	N.A	N.A	264	100	N.A	N.A

Table 1.1: Country Settings for the TLX Product Range - Part 1

	Under frequency		Over frequency		LoM - 3 ϕ surveillance		LoM - ROCOF		DC content of AC grid current	
	Trip setting [Hz]	Clearance time [m s]	Trip setting [Hz]	Clearance time [m s]	Trip setting [V]	Clearance time [m s]	Trip setting [Hz/s]	Clearance time [m s]	Trip setting [mA]	Clearance time [m s]
Austria	47.00	200	51.00	200	339	200	N.A	N.A	1000	200
Belgium	47.50	200	50.20	200	319	200	1.00	100	220	200
Czech Rep.	49.50	200	50.50	200	340	200	N.A	N.A	1000	200
Denmark	47.00	500	51.00	500	340	200	2.50	200	220	900
France	49.80	200	50.20	200	339	200	N.A	N.A	1000	200
Germany	47.50	200	50.20	200	319	200	N.A	N.A	1000	200
Greece	49.50	500	50.50	500	319	200	N.A	N.A	220	900
Italy	49.70	100	50.30	100	319	200	N.A	N.A	110	1800
Luxembourg	47.50	200	50.20	200	319	200	N.A	N.A	1000	200
Malta	47.00	500	50.50	500	359	200	1.67	500	110	1800
Netherlands	49.00	200	51.00	200	339	200	N.A	N.A	220	900
Portugal	49.00	200	51.00	200	339	200	N.A	N.A	220	900
Spain	48.00	1000	51.00	1000	339	200	N.A	N.A	1000	200
Sweden	47.00	500	51.00	500	359	200	N.A	N.A	1000	200
Switzerland	47.00	200	50.20	200	319	200	N.A	N.A	1000	200
Turkey	47.50	200	52.00	200	351	200	N.A	N.A	1000	200
Germany MV	47.50	100	51.50	100	N.A	N.A	N.A	N.A	1000	200

Table 1.2: Country Settings for the TLX Product Range - Part 2

	Residual current, absolute value		Residual current, step value (stage 1)		Residual current, step value (stage 2)		Residual current, step value (stage 3)		Isolation resistance [k Ω]
	Trip setting [mA]	Clearance time [m s]	Trip setting [mA]	Clearance time [m s]	Trip setting [mA]	Clearance time [m s]	Trip setting [mA]	Clearance time [m s]	
Austria	300	300	30	200	60	150	150	40	200
Belgium	300	300	30	300	60	150	150	40	200
Czech Rep.	300	300	30	300	60	150	150	40	200
Denmark	300	300	30	300	60	150	150	40	200
France	300	300	30	300	60	150	150	40	200
Germany	300	300	30	300	60	150	150	40	200
Greece	300	300	30	300	60	150	150	40	200
Italy	300	300	30	300	60	150	150	40	200
Luxembourg	300	300	30	300	60	150	150	40	200
Malta	300	300	30	300	60	150	150	40	200
Netherlands	300	300	30	300	60	150	150	40	200
Portugal	300	3000	30	300	60	150	150	40	200
Spain	300	300	30	300	60	150	150	40	200
Sweden	300	300	30	300	60	150	150	40	200
Switzerland	300	300	30	300	60	150	150	40	200
Turkey	300	300	30	300	60	150	150	40	200
Germany MV	300	300	30	300	60	150	150	40	200

Table 1.3: Country Settings for the TLX Product Range - Part 3

	Connecting times			Frequency stabilisation			
	Connect [s]	Re-connect [s]	Short interruption [s]	Activation [Hz]	Gradient [%/Hz]	Deactivation [Hz]	Time gradient [%/min.]
Austria	20	20	0	N/A	N/A	N/A	N/A
Belgium	30	5	3	N/A	N/A	N/A	N/A
Czech Rep.	20	20	0	N/A	N/A	N/A	N/A
Denmark	20	20	0	N/A	N/A	N/A	N/A
France	30	30	0	N/A	N/A	N/A	N/A
Germany	30	5	3	N/A	N/A	N/A	N/A
Greece	180	180	0	N/A	N/A	N/A	N/A
Italy	30	5	3	N/A	N/A	N/A	N/A
Luxembourg	30	5	3	N/A	N/A	N/A	N/A
Malta	180	180	0	N/A	N/A	N/A	N/A
Netherlands	180	180	0	N/A	N/A	N/A	N/A
Portugal	20	20	0	N/A	N/A	N/A	N/A
Spain	30	5	3	N/A	N/A	N/A	N/A
Sweden	20	20	0	N/A	N/A	N/A	N/A
Switzerland	30	5	3	N/A	N/A	N/A	N/A
Turkey	30	30	0	N/A	N/A	N/A	N/A
Germany MV	30	5	3	50.20	40	50.05	10

Table 1.4: Country Settings for the TLX Product Range - Part 4