APPENDIX: CONNECTORS

Modules equipped with PV wiring connectors that comply with the Standard for Connectors for Use in Photovoltaic Systems, UL 61730, shall have the specific allowable mating connector manufacturer(s) and model number(s) listed as below:

Female type	Connector manufacturer	Trade mark identification	Rated Voltage
TS4	TRINA SOLAR CO.,LTD	TS4	1000V or 1500V
PV-KST4/6II-UR (male), PV-KBT4/6II-UR (female)	STAUBLI ELECTRICAL CONNECTORS ESSEN GMBH	MC	1000V or 1500V
PV-KST4-EVO2/6II-UR (male), PV-KBT4-EVO2/6II-UR (female)	STAUBLI ELECTRICAL CONNECTORS ESSEN GMBH	MC	1000V or 1500V
PV-KST4-EVO2/6I-UR (male), PV-KBT4-EVO2/6I-UR (female)	STAUBLI ELECTRICAL CONNECTORS ESSEN GMBH	MC	1500V
PV-KST4-EVO2A/6II (male) PV-KBT4-EVO2A/6II (female)	STAUBLI ELECTRICAL CONNECTORS ESSEN GMBH	MC	1000V or 1500V
PV-KST4-EVO2A/6I (male) PV-KBT4-EVO2A/6I (female)	STAUBLI ELECTRICAL CONNECTORS ESSEN GMBH	MC	1500V

APPENDIX: FIRE CLASS RATING

The Type 1 and/or Type 2 and/or Type 4 modules with the specified constructions in the table below, when installed with a UL listed mounting system that has been rated as a Class A System, is suitable to maintain the System Class A Fire Rating.

Module model	Specific construction	Marking
TSM-xxxDE18M(II)/.05(II)/.08(II)/.T0(II)/.T8(II)	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Type4
TSM-xxxDD18M(II)/.05(II)/.08(II)/.T0(II)/.T8(II)		
TSM-xxxDE19/.05/.08/.T0/.T8	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Typ4
TSM-xxxDD19/.05/.08/.T0/.T8		
TSM-xxxDE20/.05/.08/.T0/.T8	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Typ4
TSM-xxxDD20/.05/.08/.T0/.T8		
TSM-xxxDE09/.05/.08/.T0/.T8	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Type4
TSM-xxxDD09/.05/.08/.T0/.T8		
TSM-xxxDE09C.05/07	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Type4
TSM-xxxDD09C.05/07		
TSM-xxxDE21/.05/.08/.T0/.T8	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Type4
TSM-xxxDD21/.05/.08/.T0/.T8		
TSM-xxxNE09RC.05	Please check the related UL description files when checking the fire protection rank of the BOM concerned.	Module Fire Performance: Type 1/ Type 2/Type4
TSM-xxxNE09RC.07		

APPENDIX: ELECTRICAL AND MECHANICAL PROPERTIES

The all electrical characteristics are measured under the Standard Test Conditions (STC) with 1000 W/m^2 irradiance, (25±2) °C cell temperature, and 1.5 air mass. The measuring tolerance is ±3% for peak power (P_{max}), ±4% for short circuit current (I_{sc}), and ±3% for open circuit voltage (V_{oc}).

P_{max}	Peak power [W]
V_{mpp}	Maximum power voltage [V]
I_{mpp}	Maximum power current [A]
V_{oc}	Open circuit voltage [V]
I_{sc}	Short circuit current [A]
I_{fuse}	Maximum overcurrent protection rating [A]
α	Temperature coefficient of I_{sc} [%/°C]
β	Temperature coefficient of V_{oc} [%/°C]
δ	Temperature coefficient of P_{max} [%/°C]
V_{syst}	Maximum system voltage [V]

DE18M(II) / DD18M(II) series											
Product Series	**P_{max} [W]**	**V_{mpp} [V]**	**I_{mpp} [A]**	**V_{oc} [V]**	**I_{sc} [A]**	**I_{fuse} [A]**	**δ [%/°C]**	**β [%/°C]**	**α [%/°C]**	**V_{syst} [V]**	**Classification**
TSM-xxxDE18M(II) series	480	42.2	11.38	50.7	11.97	20	-0.36	-0.26	0.04	1500	Protection Class II
	485	42.5	11.42	50.9	12.01		-0.36	-0.26	0.04		
	490	42.8	11.45	51.1	12.05		-0.36	-0.26	0.04		
	495	43.1	11.49	51.3	12.09		-0.36	-0.26	0.04		
	500	43.4	11.53	51.5	12.13		-0.36	-0.26	0.04		
	505	43.0	11.75	51.9	12.35		-0.36	-0.26	0.04		
	510	43.2	11.81	52.1	12.42		-0.36	-0.26	0.04		
	515	43.4	11.87	52.3	12.49		-0.36	-0.26	0.04		
	520	43.6	11.93	52.5	12.55		-0.36	-0.26	0.04		
TSM-xxxDD18M(II) series	480	42.2	11.38	50.7	11.97	20	-0.36	-0.26	0.04	1000	Protection Class II
	485	42.5	11.42	50.9	12.01		-0.36	-0.26	0.04		
	490	42.8	11.45	51.1	12.05		-0.36	-0.26	0.04		
	495	43.1	11.49	51.3	12.09		-0.36	-0.26	0.04		
	500	43.4	11.53	51.5	12.13		-0.36	-0.26	0.04		
	505	43.0	11.75	51.9	12.35		-0.36	-0.26	0.04		
	510	43.2	11.81	52.1	12.42		-0.36	-0.26	0.04		
	515	43.4	11.87	52.3	12.49		-0.36	-0.26	0.04		
	520	43.6	11.93	52.5	12.55		-0.36	-0.26	0.04		
DE19 / DD19 series											
Product Series	**P_{max} [W]**	**V_{mpp} [V]**	**I_{mpp} [A]**	**V_{oc} [V]**	**I_{sc} [A]**	**I_{fuse} [A]**	**δ [%/°C]**	**β [%/°C]**	**α [%/°C]**	**V_{syst} [V]**	**Classification**
TSM-xxxDE19 series	530	30.8	17.21	37.1	18.31	30	-0.36	-0.26	0.04	1500	Protection Class II
	535	31	17.28	37.3	18.36		-0.36	-0.26	0.04		
	540	31.2	17.33	37.5	18.41		-0.36	-0.26	0.04		
	545	31.4	17.37	37.7	18.47		-0.36	-0.26	0.04		
	550	31.6	17.4	37.9	18.52		-0.36	-0.26	0.04		
	555	31.8	17.45	38.1	18.56		-0.36	-0.26	0.04		
	560	32.0	17.49	38.3	18.60		-0.36	-0.26	0.04		
TSM-xxxDD19 series	530	30.8	17.21	37.1	18.31	30	-0.36	-0.26	0.04	1000	Protection Class II
	535	31	17.28	37.3	18.36		-0.36	-0.26	0.04		
	540	31.2	17.33	37.5	18.41		-0.36	-0.26	0.04		
	545	31.4	17.37	37.7	18.47		-0.36	-0.26	0.04		
	550	31.6	17.4	37.9	18.52		-0.36	-0.26	0.04		
	555	31.8	17.45	38.1	18.56		-0.36	-0.26	0.04		
	560	32.0	17.49	38.3	18.60		-0.36	-0.26	0.04		

DE20 / DD20 series

Product Series	P_{max} [W]	V_{mpp} [V]	I_{mpp} [A]	V_{oc} [V]	I_{sc} [A]	I_{fuse} [A]	δ [%/°C]	β [%/°C]	α [%/°C]	V_{syst} [V]	Classification
TSM-xxxDE20 series	580	33.6	17.26	40.7	18.32	30	-0.36	-0.26	0.04	1500	Protection Class II
	585	33.8	17.31	40.9	18.37		-0.36	-0.26	0.04		
	590	34	17.35	41.1	18.42		-0.36	-0.26	0.04		
	595	34.2	17.4	41.3	18.47		-0.36	-0.26	0.04		
	600	34.4	17.44	41.5	18.52		-0.36	-0.26	0.04		
	605	34.6	17.49	41.7	18.57		-0.36	-0.26	0.04		
TSM-xxxDD20 series	580	33.6	17.26	40.7	18.32	30	-0.36	-0.26	0.04	1000	Protection Class II
	585	33.8	17.31	40.9	18.37		-0.36	-0.26	0.04		
	590	34	17.35	41.1	18.42		-0.36	-0.26	0.04		
	595	34.2	17.4	41.3	18.47		-0.36	-0.26	0.04		
	600	34.4	17.44	41.5	18.52		-0.36	-0.26	0.04		
	605	34.6	17.49	41.7	18.57		-0.36	-0.26	0.04		

DE09 / DD09 series

Product Series	P_{max} [W]	V_{mpp} [V]	I_{mpp} [A]	V_{oc} [V]	I_{sc} [A]	I_{fuse} [A]	δ [%/°C]	β [%/°C]	α [%/°C]	V_{syst} [V]	Classification
TSM-xxxDE09 series	380	33.4	11.38	40.4	12	20	-0.36	-0.26	0.04	1500	Protection Class II
	385	33.6	11.46	40.6	12.07		-0.36	-0.26	0.04		
	390	33.8	11.54	40.8	12.14		-0.36	-0.26	0.04		
	395	34	11.62	41	12.21		-0.36	-0.26	0.04		
	400	34.2	11.7	41.2	12.28		-0.36	-0.26	0.04		
	405	34.4	11.77	41.4	12.34		-0.36	-0.26	0.04		
	410	34.6	11.85	41.6	12.40		-0.36	-0.26	0.04		
	415	34.8	11.93	41.9	12.48		-0.36	-0.26	0.04		
TSM-xxxDD09 series	380	33.4	11.38	40.4	12	20	-0.36	-0.26	0.04	1000	Protection Class II
	385	33.6	11.46	40.6	12.07		-0.36	-0.26	0.04		
	390	33.8	11.54	40.8	12.14		-0.36	-0.26	0.04		
	395	34	11.62	41	12.21		-0.36	-0.26	0.04		
	400	34.2	11.7	41.2	12.28		-0.36	-0.26	0.04		
	405	34.4	11.77	41.4	12.34		-0.36	-0.26	0.04		
	410	34.6	11.85	41.6	12.40		-0.36	-0.26	0.04		
	415	34.8	11.93	41.9	12.48		-0.36	-0.26	0.04		

DE21 / DD21 series

Product Series	Pmax [W]	Vmpp [V]	Impp [A]	Voc [V]	Isc [A]	Ifuse [A]	δ [%/°C]	β [%/°C]	α [%/°C]	Vsyst [V]	Classification
TSM xxDE21 series	635	36.8	17.26	44.7	18.3	30	-0.36	-0.26	0.04	1500	Protection Class II
	640	37	17.3	44.9	18.34		-0.36	-0.26	0.04		
	645	37.2	17.35	45.1	18.39		-0.36	-0.26	0.04		
	650	37.4	17.39	45.3	18.44		-0.36	-0.26	0.04		
	655	37.6	17.43	45.5	18.48		-0.36	-0.26	0.04		
	660	37.8	17.47	45.7	18.53		-0.36	-0.26	0.04		
	665	38	17.51	45.9	18.57		-0.36	-0.26	0.04		
	670	38.2	17.55	46.1	18.62		-0.36	-0.26	0.04		
	675	38.4	17.58	46.3	18.66	30	-0.36	-0.26	0.04		
TSM xxDD21) series	635	36.8	17.26	44.7	18.3		-0.36	-0.26	0.04	1000	Protection Class II
	640	37	17.3	44.9	18.34		-0.36	-0.26	0.04		
	645	37.2	17.35	45.1	18.39		-0.36	-0.26	0.04		
	650	37.4	17.39	45.3	18.44		-0.36	-0.26	0.04		
	655	37.6	17.43	45.5	18.48		-0.36	-0.26	0.04		
	660	37.8	17.47	45.7	18.53		-0.36	-0.26	0.04		
	665	38	17.51	45.9	18.57		-0.36	-0.26	0.04		
	670	38.2	17.55	46.1	18.62		-0.36	-0.26	0.04		
	675	38.4	17.58	46.3	18.66		-0.36	-0.26	0.04		

DE09C.05/07 / DD09C.05/.07 series											
Product Series	**P_{max} [W]**	**V_{mpp} [V]**	**I_{mpp} [A]**	**V_{oc} [V]**	**I_{sc} [A]**	**I_{fuse} [A]**	**δ [%/°C]**	**β [%/°C]**	**α [%/°C]**	**V_{syst} [V]**	**Classification**
TSM xxDE09C.05/ 07 series	375	33.2	11.30	40.2	11.93	25	-0.36	-0.26	0.04	1500	Protection Class II
	380	33.4	11.38	40.4	12		-0.36	-0.26	0.04		
	385	33.6	11.46	40.6	12.07		-0.36	-0.26	0.04		
	390	33.8	11.54	40.8	12.14		-0.36	-0.26	0.04		
	395	34	11.62	41	12.21		-0.36	-0.26	0.04		
	400	34.2	11.7	41.2	12.28		-0.36	-0.26	0.04		
	405	34.4	11.77	41.4	12.34		-0.36	-0.26	0.04		
TSM xxDD09C.05/ 07 series	375	33.2	11.30	40.2	11.93	25	-0.36	-0.26	0.04	1000	Protection Class II
	380	33.4	11.38	40.4	12		-0.36	-0.26	0.04		
	385	33.6	11.46	40.6	12.07		-0.36	-0.26	0.04		
	390	33.8	11.54	40.8	12.14		-0.36	-0.26	0.04		
	395	34	11.62	41	12.21		-0.36	-0.26	0.04		
	400	34.2	11.7	41.2	12.28		-0.36	-0.26	0.04		
	405	34.4	11.77	41.4	12.34		-0.36	-0.26	0.04		
NE09RC.05 series											
Product Series	**P_{max} [W]**	**V_{mpp} [V]**	**I_{mpp} [A]**	**V_{oc} [V]**	**I_{sc} [A]**	**I_{fuse} [A]**	**δ [%/°C]**	**β [%/°C]**	**α [%/°C]**	**V_{syst} [V]**	**Classification**
TSM xxNE09RC.05 series	400	41.3	9.68	49.2	10.30	25	-0.30	-0.24	0.04	1500	Protection Class II
	405	41.7	9.71	49.6	10.33		-0.30	-0.24	0.04		
	410	42.1	9.73	50.1	10.37		-0.30	-0.24	0.04		
	415	42.5	9.77	50.5	10.40		-0.30	-0.24	0.04		
	420	42.8	9.80	50.9	10.43		-0.30	-0.24	0.04		
	425	43.2	9.84	51.4	10.47		-0.30	-0.24	0.04		
	430	43.6	9.87	51.8	10.50		-0.30	-0.24	0.04		
NE09RC.07 series											
Product Series	**P_{max} [W]**	**V_{mpp} [V]**	**I_{mpp} [A]**	**V_{oc} [V]**	**I_{sc} [A]**	**I_{fuse} [A]**	**δ [%/°C]**	**β [%/°C]**	**α [%/°C]**	**V_{syst} [V]**	**Classification**
TSM xxNE09RC.07 series	400	41.3	9.68	49.2	10.30	25	-0.30	-0.24	0.04	1500	Protection Class II
	405	41.7	9.71	49.6	10.33		-0.30	-0.24	0.04		
	410	42.1	9.73	50.1	10.37		-0.30	-0.24	0.04		
	415	42.5	9.77	50.5	10.40		-0.30	-0.24	0.04		
	420	42.8	9.80	50.9	10.43		-0.30	-0.24	0.04		

