



Smart
connections.

Data Sheet

PIKO-Inverter

4.2 | 5.5 | 7.0 | 8.3 | 10.1

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Overview Technical Data

	PIKO 4.2	PIKO 5.5	PIKO 7.0 ¹	PIKO 8.3 ¹	PIKO 10.1 ¹
Input side (DC)					
Number of DC inputs /of MPP trackers	2/2	3/3	2/2	2/2	3/3
Max. recommended DC power	5-10% above rated AC output ²				
Max. DC input voltage (open circuit voltage)	950V				
Min. DC input voltage	180V				
Max. DC input current	9A/13A ³	9A	12,5A/25A ³		
Max. DC input current with parallel connection	13A	–	25A		
Output side (AC)					
Number of feed-in phases	3				
AC grid voltage	3/N/PE, AC, 230/400V				
Max. AC output current	6,1 A	8 A	10,2 A	12 A	14,5 A
Short-circuit current	10,2 A		21 A		
Rated AC output (cosφ = 1)	4.200W (UK: 4.000W, PT1: 3.680W, PT2: 3.450W)	5.500W (ES: 5.000W, PT: 5.000W)	7.000W	8.300W	10.000W
Max. AC apparent power (cosφ, adj)	4.200VA	5.500VA	7.000VA	8.300VA	10.000VA
Max. efficiency	96,5%	96,2%	97,0%	97,0%	97,0%
European-standard efficiency	95,4%	95,7%	96,3%	96,3%	96,4%
Rated frequency	50Hz				
Self-consumption at night	Inverter < 1 W, Communicationboard < 1,7 W				
Protection class	I				
Overvoltage category	DC: II/AC: III				
Galvanic isolation	Transformerless				
Setting range of the power factor cosφ _{AC,r}	0,9 capacitive ... 1 ... 0,9 inductive				
Type of grid monitoring	According to the countries' certificates				
Reverse polarity protection	Short circuit diode at DC side				
Personal protection	RCCB Type B 30mA				
Operational conditions, ingress protection according to IEC 60529	interior + exterior, IP 55				
Ambient temperature	-20° ... 60°C				
Max. humidity	0 ... 95%				
Type of cooling	Regulated ventilation				
Communications interfaces	Ethernet RJ45 (2x with Communicationboard 2, incl. integrated switch), RS485, S0, 4x analogue inputs				
Max. sound	< 33 dB(A)		Ventilator 25% -> 33 dB(A) Ventilator 50% -> 41 dB(A) Ventilator 75 ... 100% -> 46 dB(A)		
Connection technology at input side	MC 4				
Connection technology at output side	Spring-loaded terminal strip				
Dimensions (W x D x H)	420x211x350 mm		520x230x450 mm		
Weight	20,5kg	21,1 kg	33kg	33kg	34 kg
Disconnection device	Integrated electronic circuit breaker				
Warranty	5 years (optional 10/20 years)				

¹ This inverter is available in two versions: with or without arc detection

² depending on ambient temperature and solar radiation

³ with parallel connection of two MPP trackers

Inverter PIKO 4.2 | 5.5

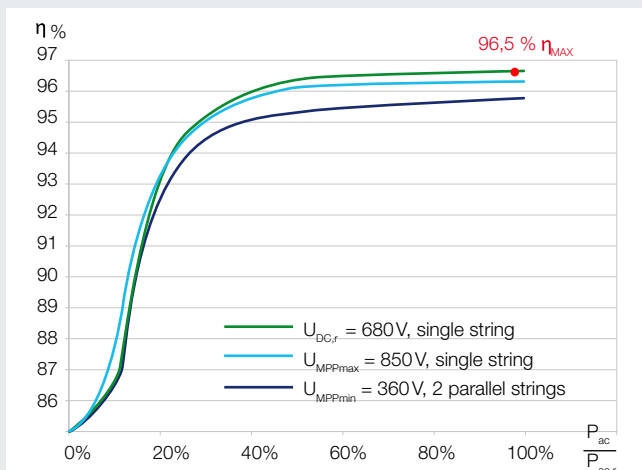
- Three-phase feed-in
- Transformerless topology
- Extension of the input current range possible (PIKO 4.2)
- Three independent MPP trackers (PIKO 5.5)
- Integrated circuit contact for self-consumption control
- Integrated electronic DC circuit breaker
- Integrated data logger and web server for system monitoring
- Various communication interfaces included as standard: Ethernet, RS485, S0, 4x analogue inputs
- Graphic display with 3-button control



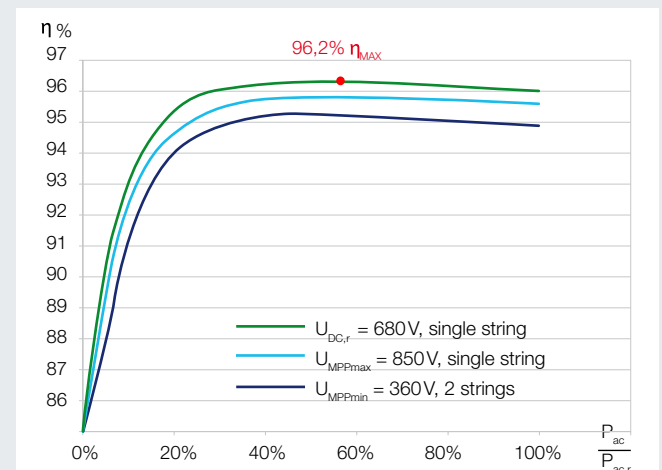
Technical Data

		PIKO 4.2	PIKO 5.5
Input side (DC)			
Number of DC inputs / number of MPP trackers		2/2	3/3
Max. input voltage (open circuit voltage)	U_{DCmax}	950V	950V
Min. DC input voltage	U_{DCmin}	180V	180V
Start-up DC input voltage	$U_{DCstart}$	180V	180V
Rated DC input voltage	$U_{DC,r}$	680V	680V
Max. MPP voltage	U_{MPPmax}	850V	850V
Min. MPP voltage in single-tracker operation	U_{MPPmin}	500V	660V
Min. MPP voltage in two-tracker or parallel operation	U_{MPPmin}	360V	360V
Max. DC input current	I_{DCmax}	9A	9A
Rated DC input current	$I_{DC,r}$	8A	8A
Max. DC input current with parallel connection	$I_{DCmax,p}$	13A	–
Output side (AC)			
Number of feed-in phases		3	3
AC grid voltage	$U_{AC,r}$	3/N/PE, AC, 230V / 400V	
Max. AC output current	I_{ACmax}	6,1A	8A
Short-circuit current	I_{sc}	10,2A	10,2A
Rated AC output ($\cos\phi = 1$)	$P_{AC,r}$	4.200W (UK: 4.000W, PT1: 3.680W, PT2: 3.450W)	5.500W (ES: 5.000W, PT: 5.000W)
Max. AC apparent power ($\cos\phi$, adj)	S_{AC}	4.200VA	5.500VA
Power factor $\cos\phi_{ACr}$		0,9 capacitive ... 1 ... 0,9 inductive	
Max. efficiency	η_{max}	96,5 %	96,2 %
European-standard efficiency	η_{EU}	95,4 %	95,7 %
Rated frequency	f_r	50Hz	50Hz

Efficiency rate characteristic curves PIKO 4.2



Efficiency rate characteristic curves PIKO 5.5



Inverter PIKO 7.0 | 8.3 | 10.1

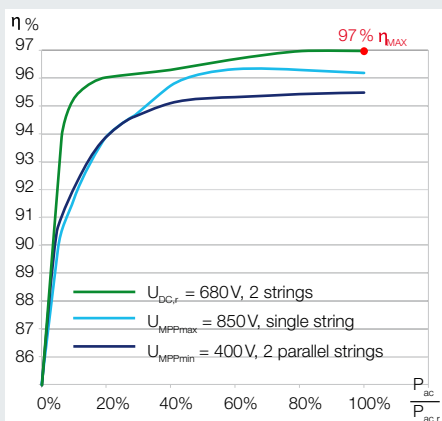
- Three-phase feed-in; Transformerless topology
- Extension of the input current range possible
- With or without arc detection
- Three independent MPP trackers (PIKO 10.1)
- Integrated circuit contact for self-consumption control
- Integrated electronic DC circuit breaker
- Integrated data logger and web server for system monitoring
- Various communication interfaces included as standard: Ethernet, RS485, S0, 4 x analogue inputs
- Graphic display with 3-button control



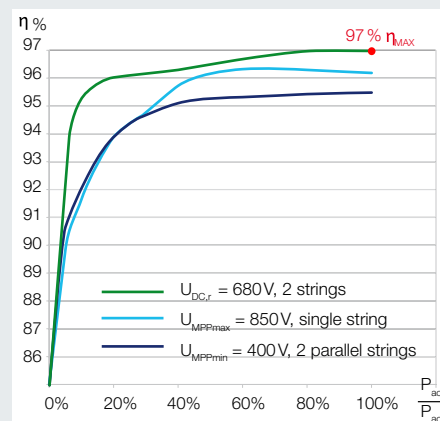
Technical Data

		PIKO 7.0	PIKO 8.3	PIKO 10.1
Input side (DC)				
Number of DC inputs / number of MPP trackers		2/2	2/2	3/3
Max. input voltage (open circuit voltage)	U_{DCmax}	950V	950V	950V
Min. DC input voltage	U_{DCmin}	180V	180V	180V
Start-up DC input voltage	$U_{DCstart}$	180V	180V	180V
Rated DC input voltage	$U_{DC,r}$	680V	680V	680V
Max. MPP voltage	U_{MPPmax}	850V	850V	850V
Min. MPP voltage in single-tracker operation	U_{MPPmin}	not recommended		
Min. MPP voltage in two-tracker or parallel operation	U_{MPPmin}	400V	400V	420V
Max. DC input current	I_{DCmax}	12,5A	12,5A	12,5A
Rated DC input current	$I_{DC,r}$	11,5A	11,5A	11,5A
Max. DC input current with parallel connection	$I_{DCmax,p}$	25A	25A	25A
Output side (AC)				
Number of feed-in phases		3	3	3
AC grid voltage	$U_{AC,r}$	3/N/PE, AC, 230V / 400V		
Max. AC output current	I_{ACmax}	10,2A	12A	14,5A
Short-circuit current	I_{sc}	21A	21A	21A
Rated AC output ($\cos\phi = 1$)	$P_{AC,r}$	7.000W	8.300W	10.000W
Max. AC apparent power ($\cos\phi, adj$)	S_{AC}	7.000VA	8.300VA	10.000VA
Power factor $\cos\phi_{ACr}$		0,9 capacitive ... 1 ... 0,9 inductive		
Max. efficiency	η_{max}	97,0%	97,0%	97,0%
European-standard efficiency	η_{EU}	96,3%	96,3%	96,4%
Rated frequency	f_r	50Hz	50Hz	50Hz

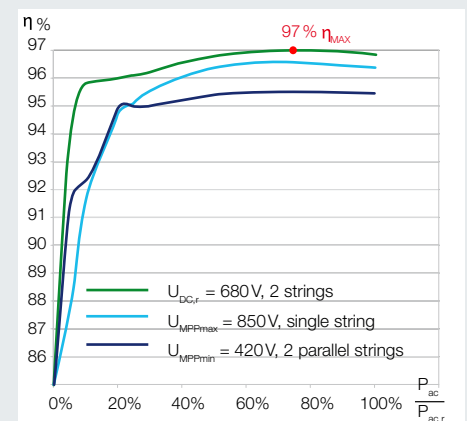
Efficiency rate characteristic curves
PIKO 7.0



Efficiency rate characteristic curves
PIKO 8.3



Efficiency rate characteristic curves
PIKO 10.1



Country intercompatibility of PIKO-Inverters

		PIKO 4.2	PIKO 5.5	PIKO 7.0	PIKO 8.3	PIKO 10.1
name plate: Par/PIB ≥						
DE ¹	Germany	03.04	01.03	–	03.00	01.00
DE NSR	Germany P(f) ² and cosφ(P) ³	03.18	01.19	10.0	03.15	01.16
DE MSR	Germany incl. LVRT ⁴	–	–	10.0	03.13	01.12
AT	Austria	03.13	01.14	10.0	03.07	01.06
CH	Switzerland	03.04	01.03	10.0	03.00	01.00
FR	France	03.04	01.03	10.0	03.00	01.00
LU	Luxembourg	03.04	01.03	10.0	03.00	01.00
BE	Belgium	03.23	01.24	10.03	03.25	01.26
NL	Netherlands	03.04	01.03	10.0	03.00	01.00
IT	Italy ⁵	03.23	01.24	10.03	03.25	01.26
ES	Spain	03.04	01.03	10.0	03.00	01.00
PT	Portugal	03.04	01.03	10.0	03.00	01.00
GR	Greece (mainland)	03.04	01.03	10.0	03.00	01.00
GR, CY	Greece (islands), Cyprus (EU)	03.04	01.03	10.0	03.00	01.00
CZ	Czech Republic	03.04	01.03	10.0	03.00	01.00
SI	Slovenia	03.15	01.16	10.0	03.11	01.10
BA, BG, HR, ME, RO, RS, SK, TR	Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Romania, Serbia, Slovakia, Turkey	03.15	01.16	10.0	03.11	01.10
UK, MT	United Kingdom, Malta	03.18	01.19	–	–	–
DK	Denmark	03.23	01.24	10.03	03.25	01.26
SE	Sweden	03.18	01.19	10.0	03.15	01.16
EE, LV, LT, PL	Estonia, Latvia, Lithuania, Poland	03.18	01.19	10.0	03.15	01.16

¹ Only permitted for inverters that are installed in PV systems that have been connected to the mains grid prior to 31 December 2011.

² P(f) = Frequency-dependent active power reduction

³ cosφ (P) = reactive power control

⁴ LVRT = Low Voltage Ride Through (only for communication board II)

⁵ conform to CEI 0-21

Standards and guidelines for PIKO-Inverters *

Directive 2004/108/EC Electromagnetic compatibility; Directive 2006/95/EC Electrical Apparatus Low Voltage Directive; Application of the CE marking in accordance with Appendix III, Section B:2013; IEC 60364-7-712; CEI 64-8, Part 7; EN 61000-3-2:2006 / A1:2009 / A2:2009; EN 61000-3-3:2008; EN 61000-6-2:2005 / AC:2005; EN 61000-6-3:2007 / A1:2011; DIN V VDE V 0126-1-1 (VDE V 0126-1-1):2006-02, „Eigenerzeugungsanlagen am Niederspannungsnetz“; BDEW-TR Erzeugungsanlagen am Mittelspannungsnetz, Ausgabe Juni 2008 + Ergänzungen 1/2009, 7/2010 und 2/2011; VDE-AR-N 4105, „Erzeugungsanlagen am Niederspannungsnetz“; OVE/ONORM E 8001-4-712:2009-12, Anhang A (AT); EN 50438:2007; RD 1699/2011; RD 661/2007; C10/11-06.2012; G83/1-1; G59/2; IEC 60947-3:1999 + Corrigendum:1999 + A1:2001 + Corrigendum 1:2001 + A2:2005; DIN EN 60947-3; VDE 0660-107:2006-03; IEC 60364-7-712:2002-05; DIN VDE 0100-712:2006-06; TF 3.2.1; CEI 0-21; CEI 0-16; UTE 15-712-1, 07/2010

*For all current certificates see www.kostal-solar-electric.com/download-en in the download area.

Country-specific switch-off limits

		U_{ACmax}	$t U_{ACmax}$	U_{ACmin}	$t U_{ACmin}$	f_{max}	$t f_{max}$	f_{min}	$t f_{min}$	
		V	s	V	s	Hz	s	Hz	s	
DE	Germany NSR, Germany MSR	264,5	0,2	184	0,2	51,5	0,2	47,5	0,2	
AT	Austria	264,5	0,2	184	0,2	51	0,2	47	0,2	
BA, BG, CH, HR, LU, ME, RO, RS, SK, TR	Bosnia and Herzegovina, Bulgaria, Switzerland, Croatia, Luxembourg, Montenegro, Romania, Serbia, Slovakia, Turkey	264,5	0,2	184	0,2	50,2	0,2	47,5	0,2	
BE	Belgium	264,5	0,1	184	0,1	51,5	0,1	47,5	0,1	
CY	Cyprus	253	0,5	207	0,5	52	0,5	47	0,5	
CZ	Czech Republic	264,5	0,2	195,5	0,2	50,5	0,2	49,5	0,2	
DK	Denmark	259,9	0,2	207	10	52	0,2	47,5	0,2	
ES	Spain	RD 661/ 2007:	253 (level 1) 264,5 (level 2)	1,5 (level 1) 0,2 (level 2)	195,5	1,5	51	0,5	48	3
		RD 1699/ 2011:	253 (level 1) 264,5 (level 2)	1,5 (level 1) 0,2 (level 2)	195,5	1,5	50,5	0,5	48	3
FR	France	264,5	0,2	195,5	0,2	50,2	0,2	47,5	0,2	
UK, MT	United Kingdom, Malta	G83/1:	264	1,5	207	1,5	50,5	0,5	47,0	0,5
		G59/2:	253 (level 1) 264,5 (level 2)	1,0 (level 1) 0,5 (level 2)	200,1 (level 1) 184 (level 2)	2,5 (level 1) 0,5 (level 2)	52,0	0,5	47,0	0,5
GR	Greece	264,5	0,5	184	0,5	51 (islands) 50,5 (mainland)	0,5	47,5 (islands) 49,5 (mainland)	0,5	
IT	Italy	253 (59.S1) 264,5 (59.S2)	3 (59.S1) 0,2 (59.S2)	195,5 (27.S1) 92 (27.S2)	0,4 (27.S1) 0,2 (27.S2)	50,5 (81>.S1) 51,5 (81>.S2)	0,1 (< 6kW) 1 (> 6kW)	49,5 (81<.S1) 47,5 (81<.S2)	0,1 (< 6kW) 4 (> 6kW)	
NL	Netherlands	253	2	184	2	51	2	48	2	
EE, LV, LT, PL, PT	Estonia, Latvia, Lithuania, Poland, Portugal	264,5	0,2	195,5	1,5	51	0,5	47	0,5	
SE	Sweden	264,5	0,2	195,5 (level 1) 207 (level 2)	0,2 (level 1) 60 (level 2)	51	0,5	47	0,5	
SI	Slovenia	264,5	0,2	195	0,2	51	0,2	47	0,5	

Terms

Input side (DC)

Maximum DC input voltage (open circuit voltage)	U_{DCmax}	The maximum voltage that is permitted at the DC input of the inverter.
Minimum DC input voltage	U_{DCmin}	The minimum input voltage at which the inverter feeds into the grid.
Start-up DC input voltage	$U_{DCstart}$	The input voltage at which the inverter starts feeding into the grid.
Rated DC input voltage	$U_{DC,r}$	The DC input voltage, which other data refer to.
Maximum MPP voltage	U_{MPPmax}	The maximum voltage at which the inverter can deliver its rated AC power.
Minimum MPP voltage	U_{MPPmin}	The minimum voltage at which the inverter can deliver its rated AC power.
Maximum DC input current	I_{DCmax}	The maximum DC current at which the inverter can be operated.
Maximum DC input current with parallel connection	$I_{DCmax,p}$	The maximum DC current that is allowed for parallel connection of two DC inputs.

Output side (AC)

Maximum AC output voltage	U_{ACmax}	The maximum permissible AC voltage.
Minimum AC output voltage	U_{ACmin}	The minimum permissible AC voltage.
AC grid voltage	$U_{AC,r}$	The voltage of the network to which the inverter is connected.
Maximum AC output current	I_{ACmax}	The maximum output current that the inverter will supply.
Short-circuit current	I_{SC}	The current that occurs on the event of a short circuit on the AC side.
Rated AC output	$P_{AC,r}$	The active power that can be delivered by the inverter in continuous operation at $\cos\varphi=1$.
Apparent power	$S_{AC,r}$	The connected power, which consists of actually implemented active power and additional existing reactive power.
Rated frequency	f_r	The nominal frequency of the connected network.
Maximum grid frequency	f_{max}	The maximum frequency (upper switch-off limit).
Minimum grid frequency	f_{min}	The minimum frequency (lower switch-off limit).
Self-consumption at night	P_L	The power that the inverter obtains from the public grid, when the modules do not supply sufficient power.
Power factor $\cos\varphi_{AC,r}$	$\cos\varphi$	The ratio between active power and apparent power.
Maximum efficiency	η_{max}	The maximum efficiency that the inverter can achieve.
European-standard efficiency	η_{EU}	Weighted overall efficiency.

KOSTAL

KOSTAL Solar Electric GmbH
Hanferstr. 6
79108 Freiburg i. Br.
Deutschland
Telefon: +49 761 47744 - 100
Fax: +49 761 47744 - 111

KOSTAL Solar Electric Ibérica S.L.
Edificio abm
Ronda Narciso Monturiol y Estarriol, 3
Torre B, despachos 2 y 3
Parque Tecnológico de Valencia
46980 Valencia
España
Teléfono: +34 961 824 - 930
Fax: +34 961 824 - 931

KOSTAL Solar Electric France SARL
11, rue Jacques Cartier
78280 Guyancourt
France
Téléphone: +33 1 61 38 - 4117
Fax: +33 1 61 38 - 3940

KOSTAL Solar Electric Hellas E.Π.Ε.
47 Steliou Kazantzidi st., P.O. Box: 60080
1st building – 2nd entrance
55535, Pilea, Thessaloniki
Greece / Ελλάδα
Telephone: +30 2310 477 - 550
Fax: +30 2310 477 - 551

KOSTAL Solar Electric Italia Srl
Via Genova, 57
10098 Rivoli (TO)
Italia
Telefono: +39 011 97 82 - 420
Fax: +39 011 97 82 - 432

www.kostal-solar-electric.com