



Smart
connections.

Data Sheet

PIKO-Inverter

3.0 | 3.6 | 4.2 | 5.5 | 7.0 | 8.3 | 10.1

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Overview Technical Data

	PIKO 3.0	PIKO 3.6	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	1/1	2/2	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	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	1			3			
AC grid voltage	1/N/PE, AC, 230V			3/N/PE, AC, 230/400V			
Max. AC output current	13,1A	15,7A	6,1A	8A	10,2A	12A	14,5A
Short-circuit current	21,6A		10,2A		21A		
Rated AC output (cosφ = 1)	3.000W	3.600W (ES: 3.300W, PT: 3.300W)	4.200W (UK: 4.000W, PT1: 3.680W, PT2: 3.450W)	5.500W (ES: 5.000W, PT: 5.000W)	7.000W (DK: 6.000W)	8.300W	10.000W
Max. AC apparent power (cosφ, adj)	3.000VA	3.600VA	4.200VA	5.500VA	7.000VA	8.300VA	10.000VA
Max. efficiency	95,7%	95,8%	96,5%	96,2%	96,0%	97,0%	97,0%
European-standard efficiency	95,0%	95,1%	95,4%	95,7%	95,3%	96,3%	96,4%
Rated frequency	50Hz						
Self-consumption at night	Inverter < 1 W, Communicationboard < 1,7 W						
Protection class	I						
Galvanic isolation	Transformerless						
Setting range of the power factor cosφ _{AC,r}	0,95 capacitive...1...0,95 inductive		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, IP55						
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	19,8kg	20kg	20,5kg	21,1kg	33kg	33kg	34kg
Disconnection device	Integrated electronic circuit breaker						

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 3.0 | 3.6

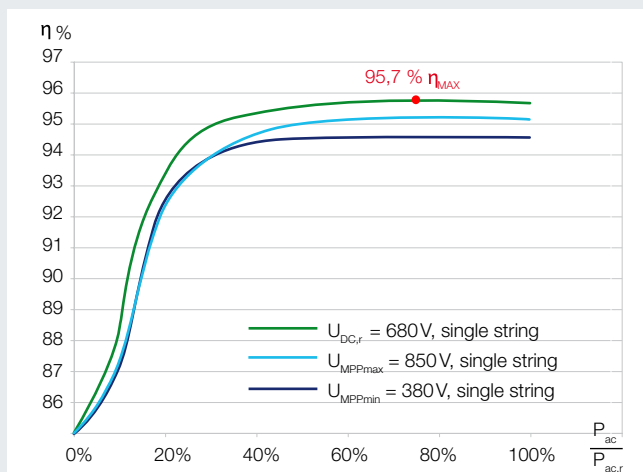
- Single-phase feed-in
- Transformerless topology
- Extension of the input current range possible
- Integrated circuit contact for self-consumption control
- Integrated electronic DC circuit breaker
- Integrated data logger and web server for system monitoring
- Various communication interfaces included as standard: Ethernet, RS485, S0, 4 x analogue inputs



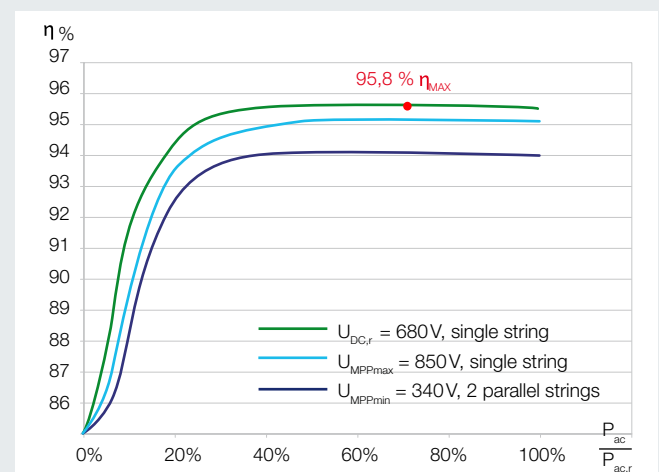
Technical Data

		PIKO 3.0	PIKO 3.6
Input side (DC)			
Number of DC inputs / number of MPP trackers		1/1	2/2
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}	380V	440V
Min. MPP voltage in two-tracker or parallel operation	U_{MPPmin}	–	340V
Max. DC input current	I_{DCmax}	9A	9A
Max. DC input current with parallel connection	$I_{DCmax,p}$	–	13A
Output side (AC)			
Number of feed-in phases		1	1
AC grid voltage	$U_{AC,r}$	1/N/PE, AC, 230V	
Max. AC output current	I_{ACmax}	13,1A	15,7A
Short-circuit current	I_{sc}	21,6A	21,6A
Rated AC output ($\cos\phi = 1$)	$P_{AC,r}$	3.000W	3.600W (ES: 3.300W, PT: 3.300W)
Max. AC apparent power ($\cos\phi$, adj)	S_{AC}	3.000 VA	3.600 VA
Power factor $\cos\phi_{ACr}$		0,95 capacitive ... 1 ... 0,95 inductive	
Max. efficiency	η_{max}	95,7 %	95,8 %
European-standard efficiency	η_{EU}	95,0 %	95,1 %
Rated frequency	f_r	50Hz	50Hz

Efficiency rate characteristic curves PIKO 3.0



Efficiency rate characteristic curves PIKO 3.6



Inverter PIKO 4.2 | 5.5

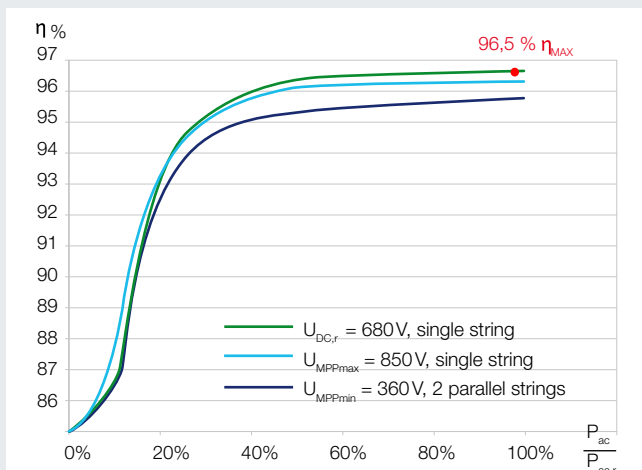
- Three-phase feed-in
- Transformerless topology
- Extension of the input current range possible (PIKO 4.2)
- Three independent MPP trackers (PIKO 5.5)
- Integrated circuit contact for self-consumption control
- Integrated electronic DC circuit breaker
- Integrated data logger and web server for system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



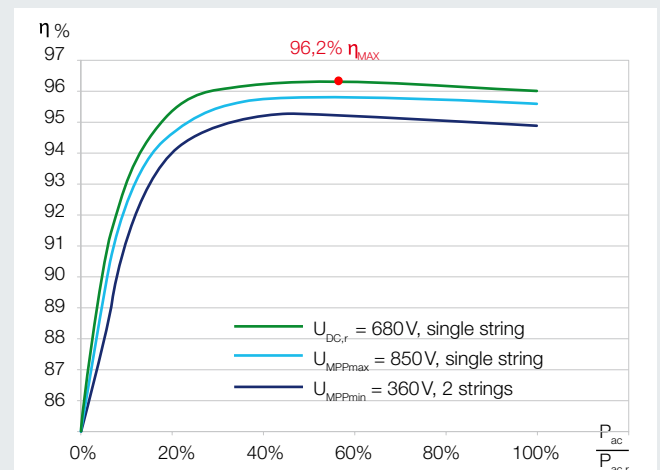
Technical Data

		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
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 $\cos\phi_{V_{ACr}}$		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

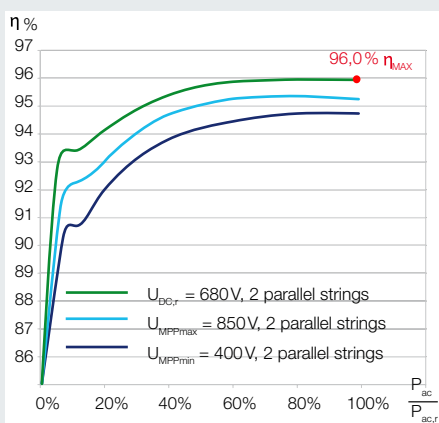
- Three-phase feed-in; Transformerless topology
- Extension of the input current range possible
- With or without arc detection
- Three independent MPP trackers (PIKO 10.1)
- Integrated circuit contact for self-consumption control
- Integrated electronic DC circuit breaker
- Integrated data logger and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



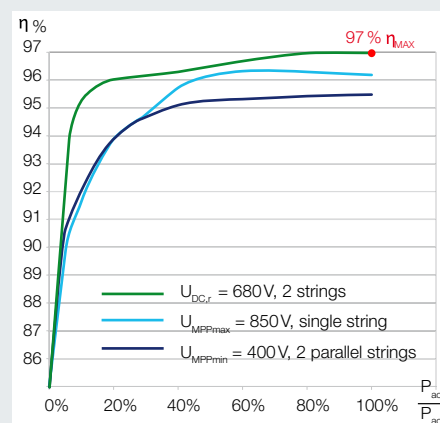
Technical Data

		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
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 (DK: 6.000W)	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}	96,0%	97,0%	97,0%
European-standard efficiency	η_{EU}	95,3%	96,3%	96,4%
Rated frequency	f_r	50Hz	50Hz	50Hz

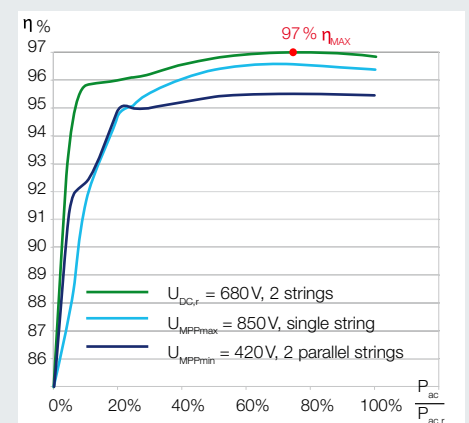
Efficiency rate characteristic curves
PIKO 7.0



Efficiency rate characteristic curves
PIKO 8.3



Efficiency rate characteristic curves
PIKO 10.1



Country intercompatibility of PIKO-Inverters

		PIKO 3.0	PIKO 3.6	PIKO 4.2	PIKO 5.5	PIKO 7.0	PIKO 8.3	PIKO 10.1
		name plate: Par/PIB ≥						
DE ¹	Germany	01.00	02.00	03.04	01.03	–	03.00	01.00
DE NSR	Germany P(f) ² and cosφ(P) ³	01.09	02.09	03.18	01.19	10.0	03.15	01.16
DE MSR	Germany incl. LVRT ⁴	–	–	–	–	10.0	03.13	01.12
AT	Austria	01.04	02.04	03.13	01.14	10.0	03.07	01.06
CH	Switzerland	01.00	02.00	03.04	01.03	10.0	03.00	01.00
FR	France	01.00	02.00	03.04	01.03	10.0	03.00	01.00
LU	Luxembourg	01.00	02.00	03.04	01.03	10.0	03.00	01.00
BE	Belgium	01.00	02.00	03.04	01.03	10.0	03.00	01.00
NL	Netherlands	01.00	02.00	03.04	01.03	10.0	03.00	01.00
IT	Italy	01.00	02.00	03.04	01.03	10.0	03.00	01.00
ES	Spain	01.00	02.00	03.04	01.03	10.0	03.00	01.00
PT	Portugal	01.00	02.00	03.04	01.03	10.0	03.00	01.00
GR	Greece (mainland)	01.00	02.00	03.04	01.03	10.0	03.00	01.00
GR, CY	Greece (islands), Cyprus (EU)	01.00	02.00	03.04	01.03	10.0	03.00	01.00
CZ	Czech Republic	01.00	02.00	03.04	01.03	10.0	03.00	01.00
SI	Slovenia	01.06	02.06	03.15	01.16	10.0	03.11	01.10
BA, BG, EE, HR, LV, LT, ME, RO, RS, SK, TR	Bosnia and Herzegovina, Bulgaria, Estonia, Croatia, Latvia, Lithuania, Montenegro, Romania, Serbia, Slovakia, Turkey	01.06	02.06	03.15	01.16	10.0	03.11	01.10
UK, MT	United Kingdom, Malta	01.06	02.06	03.18	01.19	–	–	–
DK	Denmark	01.09	02.09	03.18	01.19	10.0	03.15	01.16
SE	Sweden	01.09	02.09	03.18	01.19	10.0	03.15	01.16
PL	Poland	01.09	02.09	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)

Standards and guidelines for PIKO-Inverters *

DIN VDE 0100-712; IEC 60364-7-712; CEI 64-8/7; DIN EN 61000-3-2:2006; DIN EN 61000-3-3:1995 + A1:2001 + A2:2005; DIN EN 61000-6-2:2005; DIN EN 61000-6-3:2007; DIN EN 50178:1998; DIN V VDE V 0126-1-1 (VDE V 0126-1-1):2006-02, „Eigenerzeugungsanlagen am Niederspannungsnetz“, 4. Ausgabe 2001; BDEW-TR Erzeugungsanlagen am Mittelspannungsnetz, Ausgabe Juni 2008; VDE-AR-N 4105, „Erzeugungsanlagen am Niederspannungsnetz“; ÖVE/ÖNORM E 8001-4-712:2009-12, Anhang A (AT); EN 50438:2007; RD 1699/2011; RD 661/2007; C10/11-2009.05; 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

*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, EE, HR, LT, LU, LV, ME, RO, RS, SK, TR	Bosnia and Herzegovina, Bulgaria, Switzerland, Estonia, Croatia, Lithuania, Luxembourg, Latvia, Montenegro, Romania, Serbia, Slovakia, Turkey	264,5	0,2	184	0,2	50,2	0,2	47,5	0,2	
BE	Belgium	253	0,1	195,5 (level 1) 115 (level 2)	1,5/0,1	50,5	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 (Island) 50,5 (Mainland)	0,5	47,5 (Island) 49,5 (Mainland)	0,5	
IT	Italy	276	0,1	184	0,1	51	0,1	49	0,1	
NL	Netherlands	253	2	184	2	51	2	48	2	
PL, PT	Poland, Portugal	264,5	0,2	195,5	1,5	51	0,5	47	0,5	
SE	Sweden	264,5	0,2	195,5/207	0,2/60	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 $\cos\phi=1$.
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 $\cos\phi_{AC,r}$	$\cos\phi$	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.

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