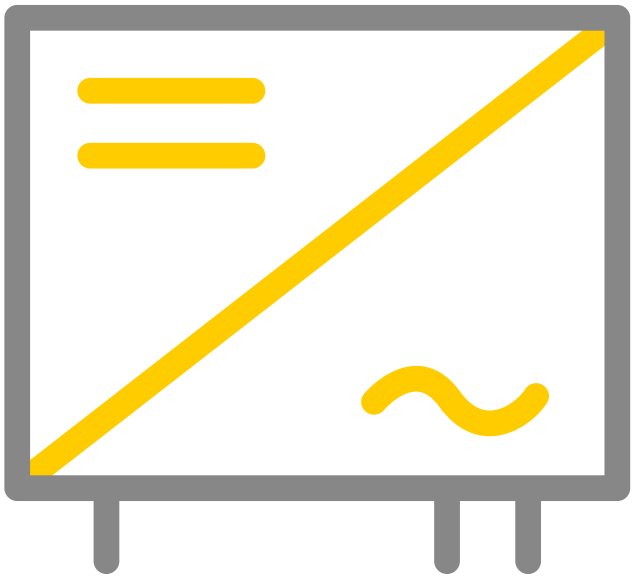
OVERVIEW

C&I INVERTER SYSTEMS



COMMERCIAL
INDUSTRIAL
UTILITY SCALE

krannich

Inverter manufacturer

DELTA

Series Project inverter	M20A Flex	M30A Flex	M50A Flex	M70A Flex	M88H	M100A Flex	M125HV 111 Gen2
Quantity MPPT	2	3	6		2	8	1
Connections per MPPT	2 each			3 each	9 each	2 each	20
Max. Current MPPT (A)	26 each	30 each	26 each		70 each	30 each	20 each
Type of DC connections	Amphenol H4 (included in delivery)				Stäubli MC4	Amphenol H4 (included)	Amphenol H4 plus
DC string fuses	○				●	○	●
DC system voltage (V)	1100						1500
Surge protection DC / AC	Type 2 / Type 2		Typ 2 (Typ 1+2 opt.) / Typ 2 (Typ 1+2 opt.)		Type 2 / Type 2 (interchangeable)	Type 2 (Type 1+2 opt.) / Type 2	Type 2 (Type 1+2 opt.) / Type 2 (Type 1+2 opt.)
Arc fault detection AFCI	●				○		●
DC I/V Curve measurement	●				○	●	○
Shading management	○						
AC Nominal power (kW)	20	30	50	70	73	100	125
Grid voltage	400V						600V
Grid certificates	VDE 4105	VDE 4105 / 4110					
Warranty / Extendable to	5 years / up to 20 years						
Interfaces Communication / FRE	WLAN, 2 x RS485, 6 x dig. In (FRE)				WLAN opt., 2 x RS485, 6 x dig. In (FRE)		
Monitoring	Delta DC1 Gateway on Delta Portal						
Measurement grid connection + Self consumption (measurement type)	Delta DC1 Gateway + Delta P3 Power Meter						
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	○						
Implementation of direct marketing > 100kWp	with compatible park controller						
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller						
System information	passive cooling system		Flexible wall/floor mounting, active cooling system				

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer

Series Project inverter	**Tauro 50-3-P (precombined)**	**Tauro Eco 50-3-P (precombined)**	**Tauro Eco 99-3-P (precombined)**	**Tauro Eco 100-3-P (precombined)**	**Tauro 50-3-D (direct)**	**Tauro Eco 50-3-D (direct)**
Quantity MPPT	3	1			3	1
Connections per MPPT	2 each				4 / 4 / 7	7 / 7
Max. Current MPPT (A)	36 / 36 / 72	75 / 75			36 / 36 / 72	75 / 75
Type of DC connections	Clamps				Stäubli MC4	
DC string fuses	○				integrated (20/ 30 A)	
DC system voltage (V)	1000					
Surge protection DC / AC	Type 1+2 / Type 1+2					
Arc fault detection AFCI	○				optional	
DC I/V Curve measurement	○					
Shading management	○					
AC Nominal power (kW)	50		99	100	50	
Grid voltage	400V				400V	
Grid certificates	VDE 4105 / VDE 4110					
Warranty / Extendable to	5 years (registration required) / up to 20 years					
Interfaces Communication / FRE	WLAN, 2 x Ethernet, 2 x RS485, 6 x dig. In/Out (FRE)					
Monitoring	Data logger and web server integrated on Fronius Portal					
Measurement grid connection + Self consumption (measurement type)	Fronius Smart Meter (direct / indirect)					
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●					
Implementation of direct marketing > 100kWp	Feed-in management via integrated data logger					
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller					
System information	Unit location with direct sunlight as well as inclined mounting position enabled, active cooling system, AC daisy chaining up to 200 kW.					

Inverter manufacturer

Series Project inverter	Tauro Eco 99-3-D (direct)	Tauro Eco 100-3-D (direct)	Verto 25.0 / 27.0 / 30.0 / 33.3	Argeno 125
Quantity MPPT	1		4	10
Connections per MPPT	7 / 7 / 8 (depending on DC fuse protection)		2	2
Max. Current MPPT (A)	75 / 75 / 75		28 each	30 each
Type of DC connections	Stäubli MC4			Phoenix Contact Sunclix
DC string fuses	integrated (20/ 30 A)			
DC system voltage (V)	1000			
Surge protection DC / AC	Type 1+2 / Type 1+2			
Arc fault detection AFCI	optional		●	Optional
DC I/V Curve measurement	○			
Shading management	○		●	
AC Nominal power (kW)	99	100	25 / 27 / 30 / 33,3	125
Grid voltage	400V			
Grid certificates	VDE 4105 / VDE 4110		VDE 4105	VDE 4105/4110
Warranty / Extendable to	5 years (registration required) / up to 20 years			
Interfaces Communication / FRE	WLAN, 2 x Ethernet, 2 x RS485, 6 x dig. In/Out (FRE)			2 x Ethernet, RS485, TUE / THU
Monitoring	Data logger and web server integrated on Fronius Portal			
Measurement grid connection + Self consumption (measurement type)	Fronius Smart Meter (direct / indirect)			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●			○
Implementation of direct marketing > 100kWp	Feed-in management via integrated data logger			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller			
System information	with compatible park controller			

* Release and availability according to manufacturer's specifications

** Discontinuation announced by manufacturer

Inverter manufacturer	GOODWE				
Series Project inverter	**GW25K-MT**	**GW30K-MT**	**GW36K-MT**	**GW50KS-MT**	**GW60KS-MT**
Quantity MPPT	3			5	6
Connections per MPPT	2 each				
Max. Current MPPT (A)	30 each				
Type of DC connections	Stäubli MC4 (included in delivery)				
DC string fuses	○				
DC system voltage (V)	1100				
Surge protection DC / AC	Type 2 / Type 2				
Arc fault detection AFCI	optional				
DC I/V Curve measurement	○				
Shading management	●				
AC Nominal power (kW)	25	30	36	50	60
Grid voltage	400V				
Grid certificates	VDE 4105				
Warranty / Extendable to	5 years / up to 20 years				
Interfaces Communi-cation / FRE	RS485 / Wifi, connection FRE with Goodwe EZLogger				
Monitoring	Direct network connection or Goodwe EZLogger on Goodwe portal + app or external manufacturer				
Measurement grid connec-tion + Self consumption (measurement type)	SEC1000 Smart Meter (indirect measurement)				
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	Control via ext. NA monitor enabled				
Implementation of direct marketing > 100kWp	with compatible park controller				
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individu-ally with grid provider)	with compatible park controller				
System information	active cooling system				

Inverter manufacturer	GOODWE					
Series Project inverter	**GW100K-HT**	**GW110K-HT**	**GW120K-HT**	**GW225K-HT**	**GW250K-HT**	**GW350KH-UT**
Quantity MPPT	10	12				
Connections per MPPT	2 each					
Max. Current MPPT (A)	30 each					40 each
Type of DC connections	Stäubli MC4 (included in delivery)					
DC string fuses	○					
DC system voltage (V)	1100			1500		
Surge protection DC / AC	Type 2 / Type 2					
Arc fault detection AFCI	optional					
DC I/V Curve measurement	○			●		optional
Shading management	○					
AC Nominal power (kW)	100	120		225	250	350
Grid voltage	400V			800V		
Grid certificates	VDE 4105 / 4110			VDE 4110 / 4120		
Warranty / Extendable to	5 years / up to 20 years					
Interfaces Communication / FRE	RS485 / Wifi, connection FRE with Goodwe EZLogger			RS485, connection FRE with GoodWe EZLogger		
Monitoring	Direct network connection or Goodwe EZLogger on Goodwe portal + app or external manufacturer					
Measurement grid connection + Self consumption (measurement type)	SEC1000 Smart Meter (indirect measurement)			---		
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	Control via ext. NA monitor enabled					
Implementation of direct marketing > 100kWp	with compatible park controller					
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller					
System information	active cooling system					

* Release and availability according to manufacturer's specifications

** Discontinuation announced by manufacturer

Inverter manufacturer

HUAWEI

Series Project inverter	SUN2000-20KTL-M5	SUN2000-25KTL-M5	SUN2000-30KTL-M3	SUN2000-36KTL-M3	SUN2000-40KTL-M3	SUN2000-50KTL-M3 *
Quantity MPPT	2		4			
Connections per MPPT	2 each					
Max. Current MPPT (A)	30 each		26 each			30 each
Type of DC connections	Stäubli MC4 (included)		Amphenol Helios H4 (included in delivery)			
DC string fuses	○					
DC system voltage (V)	1000					
Surge protection DC / AC	Type 2 / Type 2					
Arc fault detection AFCI	●					
DC I/V Curve measurement	○					●
Shading management	●					
AC Nominal power (kW)	20	25	30	36	40	50
Grid voltage	400V					
Grid certificates	VDE 4105 / 4110		VDE 4105			
Warranty / Extendable to	5 years / up to 20 years					
Interfaces Communication / FRE	RS485, WLAN, Ethernet with smart dongle / integrated FRE connections					
Monitoring	Directly via Ethernet (optional smart dongle) to Huawei portal					
Measurement grid connection + Self consumption (measurement type)	Huawei Smart Meter					
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	○					
Implementation of direct marketing > 100kWp	with compatible park controller					
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller					
System information	passive cooling system, opt. Huawei optimizer					

Inverter manufacturer

HUAWEI

Series Project inverter	SUN2000-100KTL-M2 *	SUN2000-105KTL-H1	SUN2000-115KTL-M2	SUN2000-150K-MG0
Quantity MPPT	10	6	10	7
Connections per MPPT	2 each			3
Max. Current MPPT (A)	30 each	25 each	30 each	48
Type of DC connections	Stäubli MC4 (included)	Amphenol UTX (included)	Amphenol HH4 (included)	Stäubli MC4 (included)
DC string fuses	○			
DC system voltage (V)	1100	1500	1100	
Surge protection DC / AC	Type 2 / Type 2			
Arc fault detection AFCI	●	○		●
DC I/V Curve measurement	●			
Shading management	●			
AC Nominal power (kW)	110	105	115	150
Grid voltage	400V	800V	400	
Grid certificates	VDE 4105 / 4120			VDE 4105
Warranty / Extendable to	5 years / up to 20 years			
Interfaces Communication / FRE	RS485, FRE connection via Huawei Smart Logger			
Monitoring	Huawei Smart Logger on Huawei Portal			
Measurement grid connection + Self consumption (measurement type)	Huawei Smart Meter			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	○			
Implementation of direct marketing > 100kWp	with compatible park controller			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller			
System information	passive cooling system		active cooling system	

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer

HUAWEI

Series Project inverter	SUN2000-185KTL-H1	SUN2000-215KTL-H0	SUN2000-215KTL-H3	SUN2000-330KTL-H3
Quantity MPPT	9		3	6
Connections per MPPT	2 each		4 / 5 / 5	4 / 5 / 5 / 4 / 4 / 5
Max. Current MPPT (A)	26 each	30 each	100 each	65 each
Type of DC connections	Stäubli MC4 EVO2 (included in delivery)			
DC string fuses	○			
DC system voltage (V)	1500			
Surge protection DC / AC	Type 2 / Type 2			
Arc fault detection AFCI	○			
DC I/V Curve measurement	●			
Shading management	●			
AC Nominal power (kW)	185	215	215	330
Grid voltage	800V			
Grid certificates	VDE 4105 / 4120	on request		
Warranty / Extendable to	5 years / up to 20 years	5 years / on request		
Interfaces Communication / FRE	RS485, FRE connection via Huawei Smart Logger			
Monitoring	Huawei Smart Logger on Huawei Portal			
Measurement grid connection + Self consumption (measurement type)	Huawei Smart Meter			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	○			
Implementation of direct marketing > 100kWp	with compatible park controller			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller			
System information	active cooling system			

Inverter manufacturer

KACO new energy.

Series Project inverter	Blueplanet 20.0 NX3 M3	Blueplanet 25.0 / 30.0 / 33.0 NX3 M3 *	Blueplanet 50.0 TL3 M1 INT	Blueplanet 60.0 TL3 M1 INT	Blueplanet 87.0 TL3 M1 INT	Blueplanet 92.0 TL3 M1 INT	Blueplanet 105 TL3 M1 INT
Quantity MPPT	2	3	1			1	
Connections per MPPT	2 each		S/B/M: 1, XL: 10	B/M: 1, XL: 12		1	
Max. Current MPPT (A)	32 each		90	107	160	160	183
Type of DC connections	Phoenix Contact Sunclix		S/B/M: Cable lug + clamp / XL: Sunclix		Cable lug + clamp		
DC string fuses	○		XL: ●			○	
DC system voltage (V)	1000					1500	
Surge protection DC / AC	Type 2 / Type 2	○ *	XL: Type 1+2 / -			Type 1+2 / -	
Arc fault detection AFCI	○					○	
DC I/V Curve measurement	○					○	
Shading management	○					○	
AC Nominal power (kW)	20	25 * / 30 * / 33 *	50	60	87	92	99,9
Grid voltage	400V					400V	
Grid certificates	VDE 4105	VDE 4105 *	VDE 4105 / 4110			VDE 4105 / 4110	
Warranty / Extendable to	5 years / up to 10 years					5 years / up to 10 years	
Interfaces Communication / FRE	Wifi / RS485, FRE to Kaco Powador protect		Ethernet, RS485, opt.: 4 x dig. In (FRE)			Ethernet, RS485, opt.: 4 x dig. In (FRE)	
Monitoring	directly or with Kaco blue'log S series on Kaco Portal					directly or with Kaco blue'log S series on Kaco Portal	
Measurement grid connection + Self consumption (measurement type)	Kaco blue'log with ext. meter / Kaco NX3 Smart Meter					Kaco blue'log with ext. meter / Kaco NX3 Smart Meter	
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●						
Implementation of direct marketing > 100kWp	● to Kaco Powador protect					● to Kaco Powador protect	
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	Kaco blue'log X-Serie					Kaco blue'log X-Serie	
System information	Ultra-flat design, active cooling system		versions with string fuses available			DC input up to 1500V	

* Release and availability according to manufacturer's specifications

** Discontinuation announced by manufacturer

Inverter manufacturer	KACO new energy.			
Series Project inverter	**Blueplanet 50.0 NX3 M5**	**Blueplanet 60.0 NX3 M5**	**Blueplanet 100 NX3 M8**	**Blueplanet 125 NX3 M10**
Quantity MPPT	5	5	8	10
Connections per MPPT	2 each			
Max. Current MPPT (A)	2 x 40 + 3 x 32		30 each	
Type of DC connections	Phoenix Contact Sunclix			
DC string fuses	○			
DC system voltage (V)	1100			
Surge protection DC / AC	Type 2 / Type 2		Type 2 (Type 1+2 opt.) / Type 2 (Type 1+2 opt.)	
Arc fault detection AFCI	○		optional	
DC I/V Curve measurement	○		●	
Shading management	○			
AC Nominal power (kW)	50	60	100	125
Grid voltage	400V			
Grid certificates	VDE 4105 / 4110			
Warranty / Extendable to	5 years / up to 10 years			
Interfaces Communication / FRE	Ethernet, Wifi, RS485, 4G		Ethernet, RD485, Wifi (opt.)	
Monitoring	directly or with Kaco blue'log S series on Kaco Portal			
Measurement grid connection + Self consumption (measurement type)	Kaco blue'log with ext. meter / Kaco NX3 Smart Meter			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●			
Implementation of direct marketing > 100kWp	● to Kaco Powador protect			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	Kaco blue'log X-Serie			
System information	Multi-MPPT project inverter; 5-wire grid connection; active cooling system.		Multi-MPPT project inverter; integrated web server; active cooling system; 4-wire grid connection (in symmetrical grids) possible	

Inverter manufacturer

KOSTAL Solar Electric

Series Project inverter	Piko CI 30	Piko CI 50	Piko CI 60	Piko CI 100
Quantity MPPT	2	4		8
Connections per MPPT	3 / 3	3 / 3 / 2 / 2	3 / 3 / 3 / 3	2 each
Max. Current MPPT (A)	40,5 / 40,5	39 / 39 / 26 / 26	39 / 39 / 39 / 39	MPPT 1-3: je 40 MPPT 4-8: je 32
Type of DC connections	Amphenol H4 (included in delivery)			
DC string fuses	integrated for >2 inputs			
DC system voltage (V)	1100			
Surge protection DC / AC	Type 2 / Type 2			
Arc fault detection AFCI	○			
DC I/V Curve measurement	○			
Shading management	●			
AC Nominal power (kW)	30	50	60	100
Grid voltage	400V (4-core)			
Grid certificates	VDE 4105 / 4110			
Warranty / Extendable to	5 years / up to 10 years			
Interfaces Communication / FRE	WLAN, 2 x Ethernet, RS485, 4 x dig. In (FRE)			
Monitoring	Data logger integrated, Kostal Portal, App			
Measurement grid connection + Self consumption (measurement type)	Kostal Smart Energy Meter (direct / indirect)			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●			
Implementation of direct marketing > 100kWp	with compatible parking controller			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible parking controller			
System information	System voltage up to 1100V, integrated web server with various interfaces, active cooling system, 4-wire network connection (in symmetrical networks) possible			

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer	SMA					
Series Project inverter	**STP X 12 / 15 / 20 / 25 - 50**	**STP 50-41 Core1**	**STP 110-60 Core2**	**STP 125-70**	**Sunny Highpo-wer 100-21**	**Sunny Highpo-wer 150-21**
Quantity MPPT	3	6	12		1	
Connections per MPPT	2 each				1	
Max. Current MPPT (A)	24 each	20 each	26 each	30 each	180	
Type of DC connections	Phoenix Contact Sunclix (included in delivery)				Bolt clamps with cable lug	
DC string fuses	○					
DC system voltage (V)	1000		1100			1500
Surge protection DC / AC	opt. / -	opt. / opt.	Type 1+2 / Type 2		○	
Arc fault detection AFCI	●				○	
DC I/V Curve measurement	●		○	●	○	
Shading management	●				○	
AC Nominal power (kW)	12 / 15 / 20 / 25	50	110	125	100	150
Grid voltage	400V					600V
Grid certificates	VDE 4105 / 4110			VDE 4105 / 4110 / 4120	VDE 4110 / 4120	
Warranty / Extendable to	5 years / up to 20 years					
Interfaces Communi-cation / FRE	WLAN, 2 x Ethernet, RS485 (opt.), 6 x dig. In (FRE)	WLAN, 2 x Ethernet, RS485 (opt.), FRE via I/0 module (opt.)	2 x Ethernet, FRE via Data Manager M			
Monitoring	SMA Sunny Portal / SMA Sunny Portal ennexOS					
Measurement grid connec-tion + Self consumption (measurement type)	SMA Home Manager / Energy Meter (direct / indirect)					○
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●	● with I/0 module	●		○	
Implementation of direct marketing > 100kWp	via integrated system ma-nager with SMA SPOT	via SMA Data Manager M				
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individu-ally with grid provider)	via integrated system manager (SMA Dynamic Power Control opt.) / SMA Data Manager M	via SMA Data Manager M				
System information	Integrated system mana-ger (up to 5 WR / 135kVA), Integrated interface for direct marketing SMA SPOT	free setup possible	inclined moun-ting position possible	Ideal for commercial and utility applica-tions	DC terminal box must be assem-bled by the customer	

Inverter manufacturer	SOFAR					
Series Project inverter	**25 / 30 KTLX-G3**		**40 / 50 KTLX-G3**		**60 KTLX-G3**	**80 KTLX-G3**
Quantity MPPT	3				6	
Connections per MPPT	2 each					
Max. Current MPPT (A)	40 each				32 each	40 each
Type of DC connections	Stäubli MC4 (included in delivery)					
DC string fuses	○					
DC system voltage (V)	1100					
Surge protection DC / AC	Type 2 / Type 2				Type 2 (Type 1 opt.) / Type 2	
Arc fault detection AFCI	○					
DC I/V Curve measurement	●					
Shading management	●					
AC Nominal power (kW)	25	30	40	50	60	80
Grid voltage	400V					
Grid certificates	VDE 4105 / 4110 (prototype)				VDE 4105 / 4110	
Warranty / Extendable to	10 years / up to 20 years					
Interfaces Communication / FRE	RS485, Wifi, Bluetooth, Ethernet (opt. with LAN dongle), 4 x dig. In (FRE)					
Monitoring	Sofar Portal + App					
Measurement grid connection + Self consumption (measurement type)	with compatible Energy Meter					
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●					
Implementation of direct marketing > 100kWp	with compatible park controller					
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller					
System information	active cooling system					

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer	SOFAR				
Series Project inverter	**100 KTL-G4**	**110 KTLX-G4**	**125 KTL-G4**	**255 KTL-HV**	**350 KTL-XO**
Quantity MPPT	10			12	8
Connections per MPPT	2 each				4 each
Max. Current MPPT (A)	40 each			30 each	60 each
Type of DC connections	Stäubli MC4 (included in delivery)			MC4 EVO 2	In clarification
DC string fuses	○				Electronic
DC system voltage (V)	1100			1500	
Surge protection DC / AC	Type 2 / Type 2				
Arc fault detection AFCI	●				○
DC I/V Curve measurement	●				
Shading management	●				
AC Nominal power (kW)	100	110	125	255	350
Grid voltage	400V			800V	
Grid certificates	VDE 4105 / 4110			VDE 4105 / 4110 (prototype)	
Warranty / Extendable to	10 years / up to 20 years				
Interfaces Communication / FRE	RS485, Wifi, Bluetooth, Ethernet (opt. with LAN dongle), 4 x dig. In (FRE)				
Monitoring	Sofar Portal + App				
Measurement grid connection + Self consumption (measurement type)	with compatible Energy Meter				
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●			○	
Implementation of direct marketing > 100kWp	with compatible park controller				
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller				
System information	active cooling system				

Inverter manufacturer

solaredge

Series Project inverter	SE25K Setapp	SE30K Setapp	SE33.0K Setapp
Quantity MPPT	no		
Connections per MPPT	3 total	4 total	
Max. Current MPPT (A)	37 total	43.5 total	48.25 total
Type of DC connections	Stäubli MC4		
DC string fuses	○		
DC system voltage (V)	○		
Surge protection DC / AC	Type 2 (opt.) / -	Type 2 / Type 2 (opt.)	
Arc fault detection AFCI	●		
DC I/V Curve measurement	yes, through SE optimizer		
Shading management	yes, through SE optimizer		
AC Nominal power (kW)	25	29,99	33,3
Grid voltage	400V		
Grid certificates	VDE 4105		
Warranty / Extendable to	5 years / up to 20 years		
Interfaces Communication / FRE	WLAN (antenna required), Ethernet, 2 x RS485, FRE via CCG		
Monitoring	SolarEdge Portal		
Measurement grid connection + Self consumption (measurement type)	SolarEdge Modbus Meter (indirect) / Inline Energy Meter (direct)		
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●		
Implementation of direct marketing > 100kWp	via SolarEdge Communication Gateway SE1000 CCG		
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	○		
System information	quick and easy commissioning via setapp, active cooling system		

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer	solaredge			
Series Project inverter	**SE50K**	**SE66.6K**	**SE90K**	**SE100K**
Quantity MPPT	no (2 synergy units)		no (3 synergy units)	
Connections per MPPT	4 per unit (8 total)		4 per unit (12 total)	
Max. Current MPPT (A)	36.25 each (per unit)	48.25 each (per unit)	43.5 each (per unit)	48.25 each (per unit)
Type of DC connections	Stäubli MC4			
DC string fuses	● (opt.)			
DC system voltage (V)	○			
Surge protection DC / AC	Type 2 / Type 2 (opt.)			
Arc fault detection AFCI	●			
DC I/V Curve measurement	yes, through SE optimizer			
Shading management	yes, through SE optimizer			
AC Nominal power (kW)	50	66,6	90	100
Grid voltage	400V			
Grid certificates	no	VDE 4105 / 4110		
Warranty / Extendable to	5 years / up to 20 years			
Interfaces Communication / FRE	WLAN (opt.), Ethernet, 2 x RS485, FRE via CCG			
Monitoring	SolarEdge Portal			
Measurement grid connection + Self consumption (measurement type)	SolarEdge Modbus Meter (indirect) / Inline Energy Meter (direct)			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●			
Implementation of direct marketing > 100kWp	via SolarEdge Communication Gateway SE1000 CCG			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	through SolarEdge communication gateway SE1000 CCG			
System information	modular Synergy topology, overvoltage protection of RS485 interfaces, active cooling system			

Inverter manufacturer	SOLAX POWER		
Series Project inverter	X3-PRO-20K-G2	X3-PRO-25K-G2	X3-PRO-30K-G2
Quantity MPPT	2	3	
Connections per MPPT	2 each		
Max. Current MPPT (A)	32 each		
Type of DC connections	Vaconn MC4 (included in delivery)		
DC string fuses	○		
DC system voltage (V)	1100		
Surge protection DC / AC	Type 2 / Type 2		
Arc fault detection AFCI	yes (opt.)		
DC I/V Curve measurement	○		
Shading management	yes		
AC Nominal power (kW)	20	25	30
Grid voltage	400V		
Grid certificates	VDE 4105		
Warranty / Extendable to	5 years / up to 20 years		
Interfaces Communication / FRE	Pocket Wifi (opt.), RS485, FRE via Solax DataHub1000		
Monitoring	Solax Cloud Portal		
Measurement grid connection + Self consumption (measurement type)	Solax Smart Meter (version direct + version indirect with CT's)		
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	with compatible park controller		
Implementation of direct marketing > 100kWp	with compatible park controller		
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller		
System information	Compact design, active cooling system		

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer	SOLAX POWER						
Series Project inverter	**X3-FTH-80K**	**X3-FTH-100K**	**X3-FTH-110K**	**X3-FTH-120K**	**X3-FTH-125K**	**X3-FTH-136K-MV**	**X3-FTH-150K-MV**
Quantity MPPT	9			12			
Connections per MPPT	2 each						
Max. Current MPPT (A)	32 each						
Type of DC connections	Vaconn MC4 (included in delivery)						
DC string fuses	no						
DC system voltage (V)	1100						
Surge protection DC / AC	Type 2 / Type 2						
Arc fault detection AFCI	yes (opt.)						
DC I/V Curve measurement	●						
Shading management	○						
AC Nominal power (kW)	80	100	110	120	125	136	150
Grid voltage	400V					500V	
Grid certificates	VVDE 4105 / 4110 / 4120					on request	
Warranty / Extendable to	5 years / up to 20 years						
Interfaces Communication / FRE	Pocket Wifi (opt.), RS485, FRE via Solax DataHub1000						
Monitoring	Solax Cloud Portal						
Measurement grid connection + Self consumption (measurement type)	Solax Smart Meter (version direct + version indirect with CT's)					○	
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	X3-Forth series does not have any integrated NA protection, must always be implemented on site						
Implementation of direct marketing > 100kWp	with compatible park controller						
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller						
System information	Multistring-WR for large plants, active cooling system						

Inverter manufacturer	SUNGROW Clean power for all		
Series Project inverter	**SG33CX - P2**	**SG50CX - P2**	**SG125CX-P2**
Quantity MPPT	3	5	12
Connections per MPPT	2 each		
Max. Current MPPT (A)	30 each		
Type of DC connections	Stäubli MC4 (included in delivery)		MC4 EVO2 (included in scope of delivery)
DC string fuses	○		
DC system voltage (V)	1000		1100
Surge protection DC / AC	Type 1+2 / Type 2		
Arc fault detection AFCI	●		
DC I/V Curve measurement	●	○	●
Shading management	○		●
AC Nominal power (kW)	33	50	125
Grid voltage	400V		
Grid certificates	VDE 4105 / 4110		VDE 4105 / 4110
Warranty / Extendable to	5 years / up to 20 years		
Interfaces Communication / FRE	RS485, WLAN (opt.), Ethernet (opt.), FRE via Sungrow Logger		RS485, FRE via logger
Monitoring	Sungrow iSolar Cloud Portal		
Measurement grid connection + Self consumption (measurement type)	Sungrow Smart Meter		
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	●		
Implementation of direct marketing > 100kWp	with compatible park controller		
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller		
System information	inclined mounting position enabled, active cooling system		

* Release and availability according to manufacturer's specifications
** Discontinuation announced by manufacturer

Inverter manufacturer

SUNGROW
Clean power for all

Series Project inverter	**SG125HX**	**SG350HX - V135 / V134**	**SG350HX - V114 / V115**	**SG350HX - 20 Announced**
Quantity MPPT	6	16	12	6
Connections per MPPT	2 each			5 each
Max. Current MPPT (A)	30 each		40 each	75 each
Type of DC connections	MC4 EVO2 (included in scope of delivery)			
DC string fuses	○			Electronic
DC system voltage (V)	1500			
Surge protection DC / AC	Type 2 / Type 1+2	Type 2 / Type 2		
Arc fault detection AFCI	○			
DC I/V Curve measurement	●			
Shading management	○			
AC Nominal power (kW)	125	350	350	350
Grid voltage	800V			
Grid certificates	VDE 4110 / 4120			
Warranty / Extendable to	5 years / up to 20 years			
Interfaces Communication / FRE	RS485, FRE via logger	RS485, PLC, FRE via logger		
Monitoring	Sungrow iSolar Cloud Portal			
Measurement grid connection + Self consumption (measurement type)	○			
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	○			
Implementation of direct marketing > 100kWp	with compatible park controller			
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	with compatible park controller			
System information	Connection to medium voltage mains, inclined mounting position enabled, active cooling system			

Explanation of the specifications	Information
Series Project inverter	Name of the device series / model.
Quantity MPPT	Number of MPP trackers installed in the device.
Connections per MPPT	Number of physical DC connections per MPP tracker.
Max. Current MPPT (A)	Maximum current that can be processed by the device per MPP tracker.
Type of DC connections	Possible variants of string connections: Terminals, Stäubli MC4, Stäubli EVO2, Phoenix Contact Sunclix, Amphenol, …
DC string fuses	Are DC fuses for the inputs installed in the device?
DC system voltage (V)	Maximum DC input voltage from module side.
Surge protection DC / AC	Is surge protection installed in the device on the AC / DC side / optionally retrofittable? Which protection class (type 2 / type 1+2)?
Arc fault detection AFCI	Does the inverter have detection for arcing on the string side?
DC I/V Curve measurement	Does the inverter have an integrated characteristic curve measurement for the module strings?
Shading management	Does the inverter have a function to work best even in shaded conditions?
AC Nominal power (kW)	AC output power of the device.
Grid voltage	Voltage level at the mains connection.
Grid certificates	According to which standards is the device certified?
Warranty / Extendable to	Duration of standard warranty / Extendable to X years.
Interfaces Communication / FRE	Which integrated communication interfaces does the device have? To which can the required radio ripple control receiver be connected?
Monitoring	On which portal and with which additional components can a visualization of the plant take place?
Measurement grid connection + Self consumption (measurement type)	Which additional components are required for measuring the self-consumption share at the grid connection point?
Approval of use of grid relay for external NA protection (VDE-AR-N 4105, up to 135kVA)	Can the mains relays installed in the device be controlled externally by an NA monitor? This must be expressly approved by the manufacturer.
Implementation of direct marketing > 100kWp	Which additional components can be used to implement direct marketing, which is mandatory from 100 kW?
Control interfaces according to VDE-AR-N 4110 / 4120 (to be coordinated individually with grid provider)	Which additional components can be used by the utility to implement the prescribed control interfaces?
System information	Additional information about the system, special features, etc.

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