

The Efficio™ Solar Inverter Series

E2L™

P141E



High Reliability Grid-Connected Inverters in Single & Three phase Versions from 2KW to 60KW

With today's photo-voltaic panel technology, it is possible to build solar power systems that will have a lifetime of 20 to 45 years. It is therefore desirable to install an inverter that can also meet the same life expectancy.

The Efficio™ Solar Inverter Series is an industrial grade solar inverter engineered to operate under the harshest possible environment and widest electrical parameters while delivering a staggering efficiency.

The Efficio™ Solar Inverter Series

There is no doubt about it, the new E24 Efficio Series with transformer less DSP technology is setting new standards in every sense of the phrase. No matter whether it comes to planning, connection, performance values, or design, the new E24 Efficio series is flexible, simple, efficient, and user-friendly.

ENDLESS POSSIBILITIES

The new E24 Efficio series unites key advantages in terms of installation and operation, making it an obvious decision. The new industrial grade IP 65 design, Easy installation system, built-in Wifi and RS232/486, accelerates both installation and configuration. The thin case design allows the unit to be placed at any mounting location and the large in-operation graphic display offers all information at a glance. Combined with the high degree of efficiency, the new E24 Efficio Series of inverters make a persuasive argument in every regard.

FLEXIBLE PLANNING

We understand just how much there is to think about when planning a PV plant: a wide variety of module types, locations, and roof pitches often makes selecting the right inverter difficult. The problem: desired parameters do not always coincide with plans, and combination possibilities are not always as flexible as they should be. The all-too common result: unwanted compromise when it comes to plant planning and Do you need more flexibility in your planning?

The optimal solution is right here! Design. This is exactly where our engineers enter the picture. They have developed a solution, the new Efficio Series.

EASY DESIGN

The E24 Efficio Series offers a nearly unlimited range of options for the planning phase. A wide input voltage range of 150–450/500 volts means that most configurations can be covered by one or two strings. That not only reduces the number of module strings, but also saves installation time and effort and, thus, costs.

WIFI

WIFI is cordless, effortless and most probably installed in your home. It goes without saying that the new E24 Efficio units come equipped with tried-and-tested Wifi radio technology.

That saves you installation time, effort, and costs because no additional cables are required for monitoring the Efficio Series by using the software included with every unit.

OPTIONS

- RS 485 to USB Converter
- RS 485 to RS 232 Module
- GPRS Module for web monitoring of up to 32 inverters
- Ethernet / Wifi Module for monitoring of up to 32 inverters

MODULAR AND COST EFFECTIVE

The Efficio Series is designed in Modular units. Single Phase units are available with one Tracker from in 2,3 and 3.6KW per unit and two trackers in 3 and 5KW options. This provides you with the flexibility to design your solar system with the exact number of trackers and power.

The three phase Efficio units are supplied with Three Trackers for maximum efficiency and reliability.

EASY CONNECTIONS

Grounding is fast and easy using the plug-in grounding module that can fit all solar panel types. All cables can be easily connected from one side through plug in junctions.

HIGHER YIELD

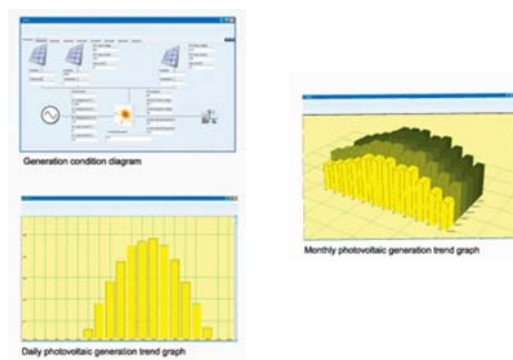
Are you looking for the highest efficiencies for an optimal energy recovery? It's not just a question of efficiency!

At E24, it goes without saying: you can expect top marks when it comes to efficiency, all based on our knowledge and experience.

Our inverters use transformer less high frequency DSP technology that yields staggering efficiencies as no heat is dissipated in the transformer. Our wide range MPP trackers operating at 99.9% efficiency allow the optimal harvesting of solar power.

USER-FRIENDLINESS

Beautiful and simple: an elegant design, a large multilingual graphic display, and the Wifi® interface coupled with the simple software make the new E24 Efficio Series a simple and easy to use device.



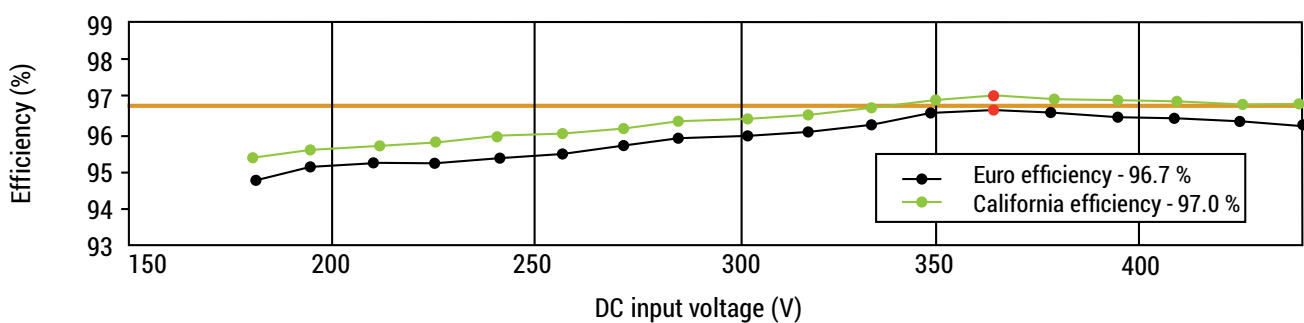


Single Phase 1 MPP Tracker 2,3,3.6 KW

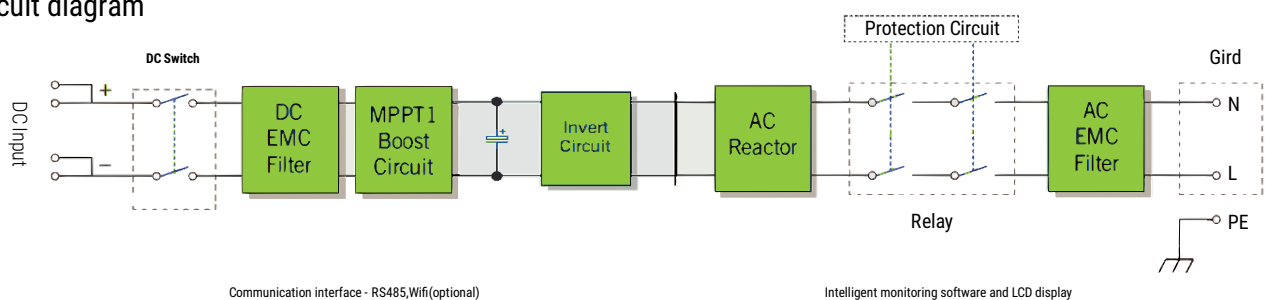
- MPPT Efficiency > 99.9%
- Maximum efficiency > 97.6%
- one MPP Tracker
- Low sensitivity for grid disturbances to avoid undesired disconnections
- Wide range of input voltage
- Wide DC input voltage
- Wide operating temperature range
- IP65 harshest industrial protection for indoor and outdoor applications
- RS232/RS 485, Wifi interface
- Ethernet and GPRS options
- Easy to install and operate
- LCD display showing detailed operational parameters and data.
- Monitoring Software provides operational status and power generation and consumption information

CE, TUV (VDE 4105/VDE 0126), SAA, G59

Efficiency curve



Circuit diagram

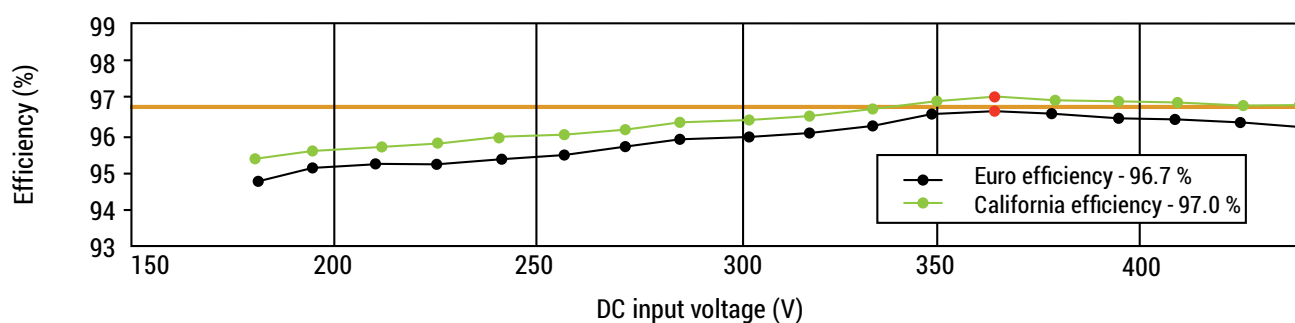




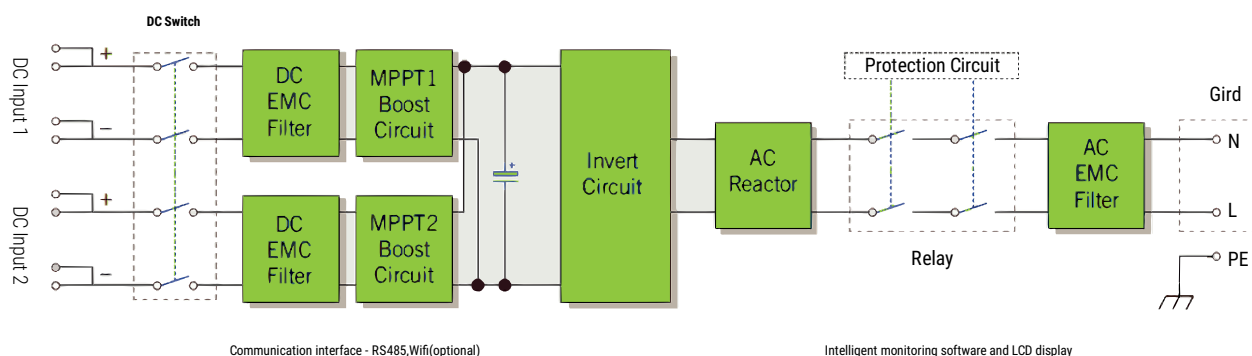
Single Phase 1 MPP Tracker 3,5 KW

- MPPT Efficiency > 99.9%
- Maximum Efficiency >97.6%
- Two MPP Trackers
- Low sensitivity for grid disturbances to avoid undesired disconnections
- Wide range of input voltage
- Wide DC input voltage
- Wide operating temperature range
- IP65 harshest industrial protection for indoor and outdoor applications
- RS232/RS 485, Wifi interface
- Ethernet and GPRS options
- Easy to install and operate
- LCD display showing detailed operational parameters and data.
- Monitoring Software provides operational status and power generation and consumption information

Efficiency curve



Circuit diagram



Technical Specifications for Single Phase Inverters

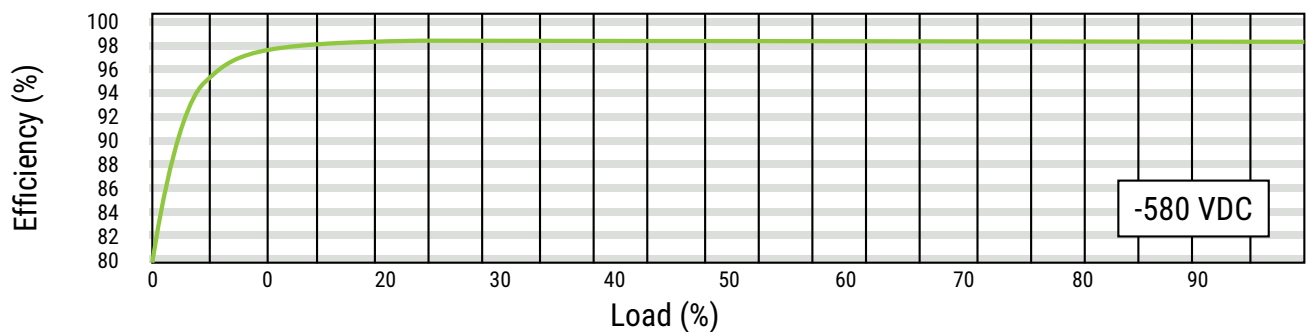
Item Reference	PVIE1-120I	PVIE1-130I	PVIE1-136I	PVIE1-230I	PVIE1-250I
INPUT					
Max. DC input power	2400W	3300W	4000W	3300W	5500W
Max. DC input voltage	500Vdc			600Vdc	
MPPT tracking voltage range	150~450Vdc (Rated voltage 360Vdc)			150~500Vdc (Rated voltage 360Vdc)	
Number of MPPT tracking	1			2	
Max. input current for each tracking	11A	17A	20A	9Ax2	15Ax2
OUTPUT					
Rated output power	2000W	3000W	3600W	3000W	5000W
Max. AC output power	2200W	3100W	3700W	3100W	5100W
Rated output voltage	230Vac				
Output voltage range	184~276Vac				
Grid frequency range	50/60Hz(±5Hz), (adjustable)				
Rated output current	8.7A	13A	15.6A	13A	21.7A
Max. output current	11A	15A	18A	15A	24A
Power factor (cos θ)	1			0.9 leading-0.9 lag	
Total harmonic current distortion (THDi)	<3%				
SYSTEM FEATURES					
Max. efficiency	>96.9%	>97.5%	>97.6%	>97.4%	>97.6%
Euro efficiency	>96.0%	>96.5%	>96.6%	>96.6%	>96.8%
MPPT efficiency	>99.9%				
Standby (night time) losses	<0.2W				
DC switch	Optional				
Communication interface	WiFi / RS485 standard, Ethernet (optional)				
ENVIRONMENTAL					
Operating temperature	-20 ⁰ C~60 ⁰ C				
Humidity range	0~95%(non-condensing)				
Altitude	2000m				
Noise level	<25dB (1 meter from surface)				
Protection rating	IP65				
PHYSICAL					
Dimension WxHxD (mm)	335x580x170			395x637x180	
Shipping weight (Kg)	15.8	18.2		23.5	25.8
STANDARDS					
Safety	IEC/EN62109-1,IEC/EN62109-2,VDE0126-1-1, IEC60068-2-1, IEC60068-2-2, IEC60068-2-14, IEC60068-2-30, IEC61683, IEC62116, IEC61727				
EMC	EN61000-6-2:2005, EN61000-6-4:2007/A1:2011				



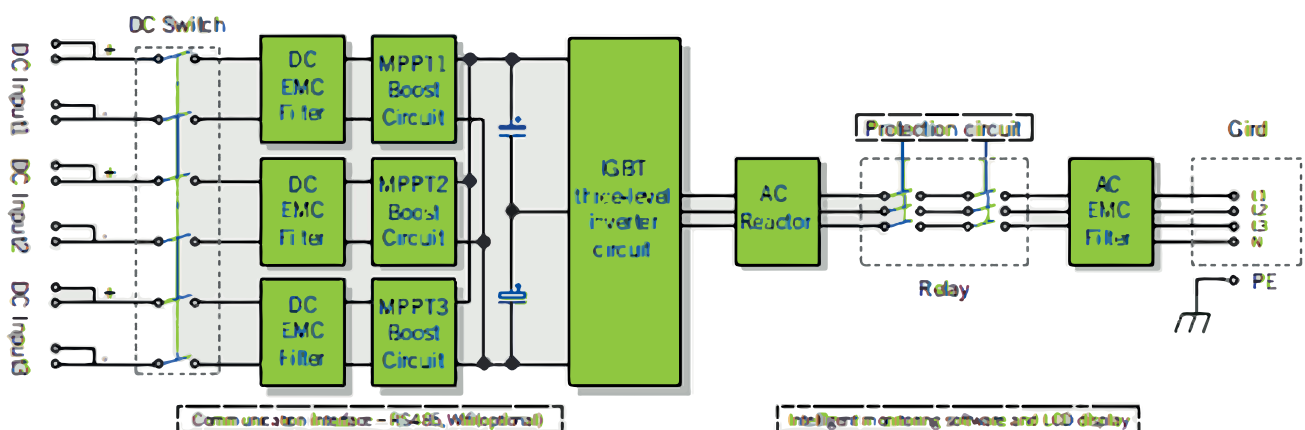
Three Phase 10 to 60 KW

- MPPT Efficiency > 99.9%
- Maximum Efficiency >98.2%
- Three MPP Trackers
- Low sensitivity for grid disturbances to avoid undesired disconnections
- Wide range of input voltage
- Wide DC input voltage
- Wide operating temperature range
- IP65 harshest industrial protection for indoor and outdoor applications
- RS232/RS 485, Wifi interface
- Ethernet and GPRS options
- Easy to install and operate
- LCD display showing detailed operational parameters and data.
- Monitoring Software provides operational status and power generation and consumption information

Efficiency curve



Circuit Diagram



Technical Specifications for Three Phase Inverters

Item Reference	PVIE3-10KI	PVIE3-12KI	PVIE3-15KI	PVIE3-17KI	PVIE3-20KI
INPUT					
Max. DC input power	12KW	14KW	17KW	19KW	22KW
Max. DC input voltage	900Vdc				
MPPT tracking voltage range	250~850Vdc (Rated voltage 580Vdc)				
Number of MPPT tracking	3				
Max. input current for each tracking	12Ax3		17Ax3		
OUTPUT					
Rated output power	10KW	12.5KW	15KW	17KW	20KW
Max. AC output power	10.5KW	13KW	15.5KW	17.5KW	20.5KW
Rated output voltage	400Vac				
Output voltage range	400V±20% (adjustable)				
AC output topology	3Ph+N+PE, Transformer-less				
Grid frequency range	50/60Hz(±5Hz), (adjustable)				
Rated output current	14.5A	18.1A	21.7A	24.6A	29A
Max. output current	17A	20A	24A	27A	30A
Power factor (cos θ)	0.9 leading~0.9 lagging				
Total harmonic current distortion (THDi)	<3%				
SYSTEM FEATURES					
Max. efficiency	>98.0%	>98.0%	>98.1%	>98.1%	>98.2%
Euro efficiency	>97.5%	>97.5%	>97.6%	>97.6%	>97.7%
MPPT efficiency	99.9%				
Standby (night time) losses	<2W				
Cooling	Forced air cooling				
DC switch	Optional				
Communication interface	RS485 standard, external WiFi or Ethernet (optional)				
ENVIRONMENTAL					
Operating temperature	-20 ⁰ C~60 ⁰ C				
Humidity range	0~95%(non-condensing)				
Altitude	2000m				
Noise level	<40dB (1 meter from surface)				
Protection rating	IP65				
PHYSICAL					
Dimension WxHxD (mm)	506x670x210		522x690x210		
Shipping weight (Kg)	44		51		
STANDARDS					
Safety	IEC/EN62109-1,IEC/EN62109-2,VDE0126-1-1, IEC60068-2-1, IEC60068-2-2, IEC60068-2-14, IEC60068-2-30, IEC61683, IEC62116, IEC61727				
EMC	EN61000-6-2:2005, EN61000-6-4:2007/A1:2011				

Item Reference	PVIE3-30KI	PVIE3-50KI	PVIE3-60KI
INPUT			
Max. DC input power	35KW	56KW	67KW
Max. DC input voltage	1000Vdc		
MPPT tracking voltage range	250~950Vdc		
Full load mppt voltage range	480~800Vdc		500~800Vdc
Normal DC voltage	620Vdc		
Min./start DC voltage	200/250Vdc		
Number of MPPT tracking	3		
Strings per MPP tracker	2	4	
Max. input current per MPP tracker	26A/26A/26A	36A/36A/36A	40A/40A/40A
OUTPUT			
Normal AC output power	30KW	50KW	60KW
Max. AC output power	33KW	55KW	66KW
Normal AC voltage	400Vac		
AC voltage range	400Vac±20%		
Normal AC grid frequency	50 / 60 Hz		
AC grid frequency range	±5Hz		
Rated. output current	44A	72A	87A
Max. output current	48A	80A	95A
Phase shift (cos θ)	0.8leading - 0.8 lagging		
THDi	<3%		
AC connection	3W + N + PE/3W + PE		
Topology	Transformer less		
EFFICIENCY			
Max. efficiency	98.3%	98.6%	
Euro efficiency	98.0%	98.2%	
PROTECTION DEVICES			
all-pole fault current monitoring unit	yes		
Ground fault monitoring	yes		
MECHANISM DATA			
Dimension WxHxD (mm)	636x958x260		
Shipping weight (Kg)	61Kg	68Kg	70Kg
ENVIRONMENT DATA			
Operating temperature range	-25 ⁰ C~+60 ⁰ C		
Noise emission	≤40dB	≤60dB	
Cooling concept	convection	fans	
Protection rating	IP65		
FEATURES			
LCD Display	yes		
interfaces	RS485		
STANDARDS			
Safety	IEC/EN62109-1,IEC/EN62109-2,VDE0126-1-1, IEC60068-2-1, IEC60068-2-2, IEC60068-2-14, IEC60068-2-30, IEC61683, IEC62116, IEC61727		
EMC	EN61000-6-2:2005, EN61000-6-4:2007/A1:2011		

PV Panels



PV Cabling Kits



PV Mounting Kits



PV Charge
Controllers



PV Inverter



PV Controllers



E24 Modular Range Of Products For Building Easy, Flexible & Evolutive Solutions

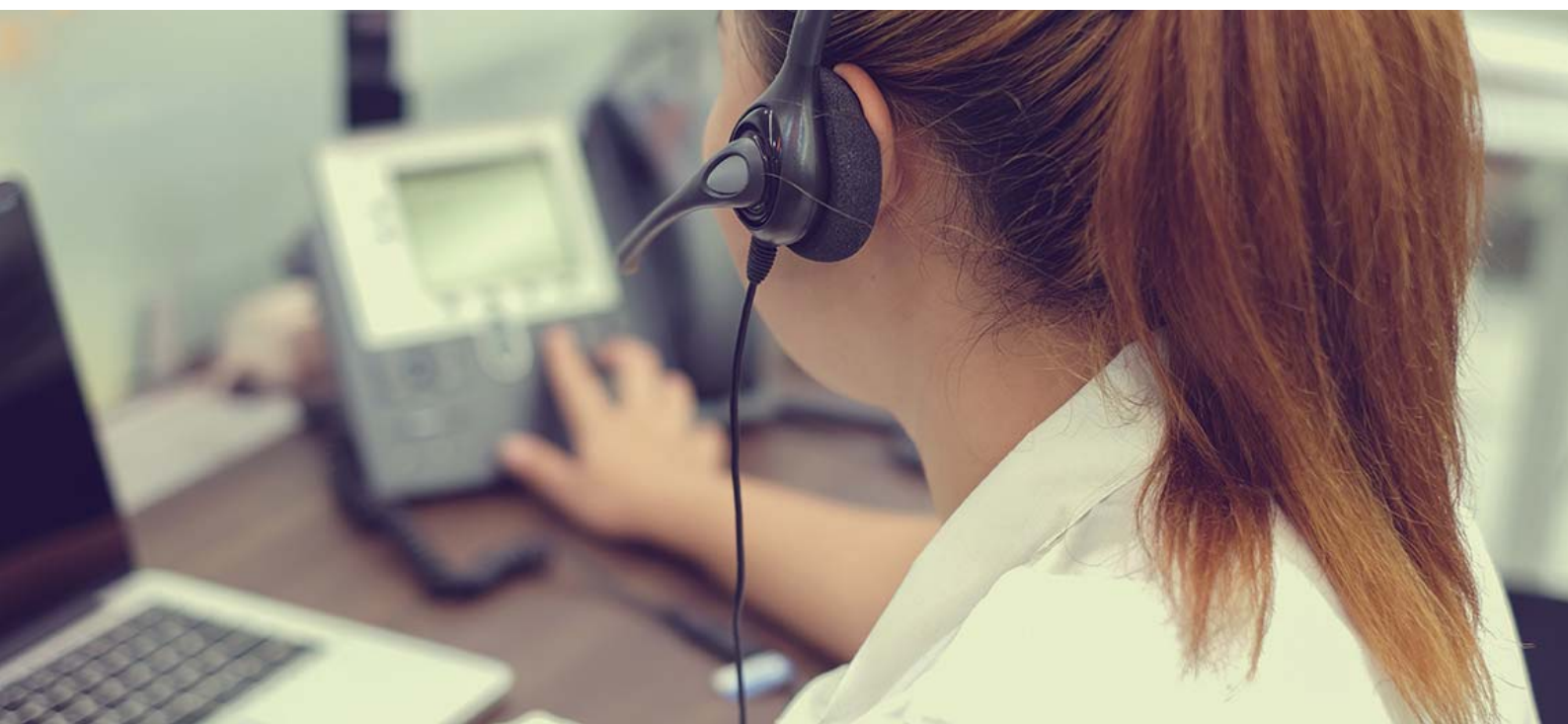
E24 products dynamically evolve with the lifestyle and work style of its customers while easing the installation process.

E24 products are conceived in modules allowing for an easy upgrade to adjust with the needs of the customers. Being modular and easy to connect E24 products allow installers to easily configure the required modules for an optimal solution while offering easy upgrade options.



Ordering Information

Ref Number	Description
PVIE1-120I	Efficio Grid Connected inverter, 1 MPP Tracker, 2KW, 1Phase, 230V, 50/60Hz
PVIE1-130I	Efficio Grid Connected inverter, 1 MPP Tracker, 3KW, 1Phase, 230V, 50/60Hz
PVIE1-136I	Efficio Grid Connected inverter, 1 MPP Tracker, 3.6KW, 1Phase, 230V, 50/60Hz
PVIE1-230I	Efficio Grid Connected inverter, 2 MPP Tracker, 3KW, 1Phase, 230V, 50/60Hz
PVIE1-250I	Efficio Grid Connected inverter, 2 MPP Tracker, 5KW, 1Phase, 230V, 50/60Hz
PVIE3-10KI	Efficio Grid Connected inverter, 3 MPP Trackers, 10KW, 3Phase, 400V, 50/60Hz
PVIE3-12KI	Efficio Grid Connected inverter, 3 MPP Trackers, 12.5KW, 3Phase, 400V, 50/60Hz
PVIE3-15KI	Efficio Grid Connected inverter, 3 MPP Trackers, 15KW, 3Phase, 400V, 50/60Hz
PVIE3-17KI	Efficio Grid Connected inverter, 3 MPP Trackers, 17KW, 3Phase, 400V, 50/60Hz
PVIE3-20KI	Efficio Grid Connected inverter, 3 MPP Trackers, 20KW, 3Phase, 400V, 50/60Hz
PVIE3-30KI	Efficio Grid Connected inverter, 3 MPP Trackers, 30KW, 3Phase, 400V, 50/60Hz
PVIE3-50KI	Efficio Grid Connected inverter, 3 MPP Trackers, 50KW, 3Phase, 400V, 50/60Hz
PVIE3-60KI	Efficio Grid Connected inverter, 3 MPP Trackers, 60KW, 3Phase, 400V, 50/60Hz
PVIEA-DCS1	DC switch for Efficio 1Phase inverters
PVIEA-DCS3	DC switch for Efficio 3Phase inverters
PVIEA-URS	USB to RS-485 Converter Kit
PVIEA-RS42	RS485/232 Module
PVIEA-GPRS	GPRS Option for web monitoring of up to 32 inverters
PVIEA-WFE1	Wi-Fi/Ethernet Option for web monitoring for 1 inverter
PVIEA-WFE32	Wi-Fi/Ethernet Option for web monitoring of up to 32 inverters





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