



Conergy CIS 400-1200

The over seven meter long Conergy CIS Central Inverter Station is delivered at the solar park construction site completely preconfigured and is immediately ready for use. The type tested station for large solar parks up to the megawatt class already contains all components required for operation – from the inverters to the transformer and switching systems to the monitoring systems.



High yields in practical use

- | Outstanding peak system efficiency of up to 98.2 %
- | High-quality equipment with latest inverter technology from the Conergy IPG C Series

Permanently reliable operation and long service life

- | Complete station type tested
- | Optimised ventilation concept for reliable operation

Planning flexibility

- | Modular design: available in the output classes 400 kW to 1.2 MW, staggered in 100-kW steps
- | Complies with all relevant European standards, directives and guidelines (including German Medium-Voltage Guideline)

Easy to install

- | Fully integrated inverter station including medium-voltage transformer, ventilation and monitoring system
- | Minimal planning, transport and installation effort

Custom tailored final product thanks to flexible combination

In the station made of weatherproof concrete, the new generation of Conergy IPG C central inverters are used. Conergy will offer the complete solution with a rated output of 400 kW to 1.2 MW. As a result, the customer is provided with a final product exactly tailored to meet its needs and requirements – with a maximum performance and top reliability thanks to exactly matched system technology.

Preconfigured complete system

The interconnections of the individual components have been pre-tested without exception. Connections, links, the comprehensive protection system and the certified ventilation and filter concept are ready for immediate use. Local planning and installation effort and expense are therefore reduced to a fraction with the Conergy complete solution.

Conergy CISs confirm with European directives

Like the new Conergy IPG C central inverters, the central inverter station also complies with all currently applicable European standards and directives for smooth commissioning.

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Input values (PV generator)	
Max. DC input voltage	1,000 V
Minimum DC input voltage (V_{DCmin})	530 V
Maximum MPP voltage (V_{MPPmax})	800 V
Minimum MPP voltage (V_{MPPmin})	530 V
Max. input current (I_{PCmax})	590 A (IPG 300C)/400 A (IPG 200C)
Number of inputs	4 per inverter
Fuse per input	175 A–250 A (adjustable)
Connection design	M12 screws to copper rail
Coupling box	Integrated in inverter
Output data (grid)	
Rated grid voltage ($V_{AC,r}$)	20 kV with tapings 2x +/-2,5 %
Rated frequency (f _r)	50 Hz
Maximum frequency (f _{max})	52 Hz
Minimum frequency (f _{min})	47.5 Hz
Power factor (cos φ)	Adjustable 0.7 inductive to 0.7 capacitive
Distortion factor (at rated capacity)	≤ 2 %
Connection design	Connection type A acc. EN 50180 and EN 50181, external cone 250 A
Auxiliary supply	
Required auxiliary power supply	400 V/50 Hz/14 kVA/3-phase with N/TN grid
Required series fuse	C20 A, 3-phases
Supply for customer devices	B16 A/230 V/50 Hz with RCD (one connection per inverter)
Optional auxiliary transformer	Dry transformer 400 V/14 kVA
Cooling	
Cooling type	Air cooling, individual thermally controlled fans
Type of air filter	Pocket filter in accordance with G3 EN 779
Filter surface	40 m ²
Max. counter-pressure with additional station conversion	50 Pa in total for feed and exhaust air
Environmental / ambient conditions	
Temperature range ¹	–20° C to +50° C
Maximum temperature for permanent rated capacity ¹	+50 °C
Relative humidity (non-condensing)	≤ 95 %
Installation altitude above sea level	≤ 2,000 m
Safety / protective equipment	
Protection type	IP 54 in accordance with EN 60529
Earth fault monitoring	Yes, response configurable
Overvoltage arrester	Integrated in inverter: DC side Type II, mains side Type I in accordance with IEC 61643-1
Decoupling of PV generator from the grid	Galvanic isolation by means of the medium-voltage transformer
Medium-voltage transformer	
Construction	Oil transformer, hermetically sealed
Cooling	ONAN
Filling	Dry and vented mineral oil
Tappings	21.0 kV/20.5 kV/20 kV/19.5 kV/19 kV

¹ Depending on the operating state, de-rating by the transformer monitoring system can result.

² Values with external auxiliary power supply, vary depending on expansion level and degree of soiling of filters.

³ The fans in the station are temperature regulated.

⁴ Values when an external auxiliary power supply is used.

⁵ Height specifications without exhaust air hoods. These must be mounted at the installation location; dimensions without special equipment.

⁶ Typical values.

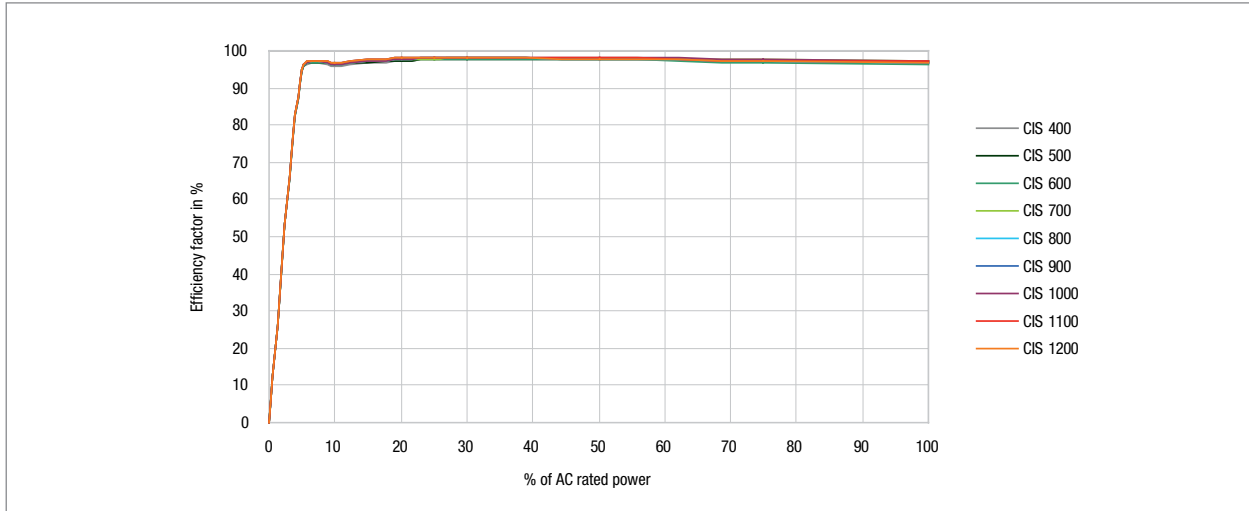


Conergy CIS		400-1200							
Inverter									
Transient emissions (EMC)	DIN EN 61000-6-4:2007-09								
Interference resistance (EMC)	DIN EN 61000-6-2:2006-03								
Device safety (inverter)	DIN EN 50178:1998-04								
Preset standards for grid monitoring	VDE 0126-1-1, D 5940 Ed 2.2, RD 664, RD 1663, EN 50438:2007, ÖVE E 2750								
Station design									
Materials	Waterproof lightweight concrete LC 25/28 in accordance with DIN 1045:2001-07								
Exposition class for exterior parts	XC4, XF1, XA1 in accordance with DIN 1045:2001-07								
Exposition class for interior parts	XC1 in accordance with DIN 1045:2001-07								
Exterior walls	Exposed aggregate concrete, grain 8/16 (other options available)								
Roof	Concrete, laid on sliding								
Foundation trough	Oil-tight in accordance with Sec. 19 of German WHG (metal trough available as an option)								
Exhaust air hood	Aluminium, not assembled for transport								
Air grille/doors/frames	Hot-galvanised steel (aluminium optional)								
Attachment points	4 piece Deha anchor, type 20T								
Cable entries	Number, position and design are project-specific								
Earthing bushing	Hauff earthing bushing HEA-I-M12								
Standards									
Grid quality	DIN EN 61000-3-11:2001-04/DIN EN 61000-3-12:2005-09								
CE conformity	Yes								
Type test	Yes (Bureau Veritas)								
Conformity with EEG 2009 §6.1	Yes (additional hardware may be required)								
Conformity with Medium-Voltage Directive (BDEW) of June 2008	Yes (additional hardware may be required)								
Model	CIS 400	CIS 500	CIS 600	CIS 700	CIS 800	CIS 900	CIS 1000	CIS 1100	CIS 1200
AC rated capacity (inverter) ($P_{AC,r}$)	400 kVA	500 kVA	600 kVA	700 kVA	800 kVA	900 kVA	1,000 kVA	1,100 kVA	1,200 kVA
Recommended DC output (kWp)	440	550	660	770	880	990	1,100	1,210	1,320
Max. DC output (kWp)	480	600	720	840	960	1,080	1,200	1,320	1,440
AC nominal current (A)	11.55	14.43	17.32	20.20	23.10	25.98	28.87	31.75	34.64
System efficiency⁴									
Max. efficiency	98.1 %	98.1 %	98.2 %	98.1 %	98.1 %	98.2 %	98.1 %	98.1 %	98.2 %
European efficiency factor	97.6 %	97.7 %	97.8 %	97.6 %	97.7 %	97.8 %	97.7 %	97.7 %	97.8 %
Californian efficiency factor	97.9 %	98.0 %	98.0 %	97.9 %	98.0 %	98.0 %	98.0 %	98.0 %	98.0 %
Auxiliary power supply²									
Standby/night-time power consumption (P_{night})	220 W			330 W			440 W		
Power consumption (P_{day}) ³	220 W to 4,400 W			330 W to 6,500 W			440 W to 8,700 W		
Medium-voltage transformer									
Rated power	600 kVA			900 kVA			1,200 kVA		
Vector group	Dyn5, optional Dyn5yn5			Dyn5					
Impedance voltage ⁶	6 %								
No-load losses ⁶	320 W			400 W			580 W		
Dimensions/weight									
Dimensions in mm (W × H × D) ⁵	2,980 × 2,980 × 5,380			2,980 × 2,980 × 6,980					
Weight in tonnes (t)	28			35					

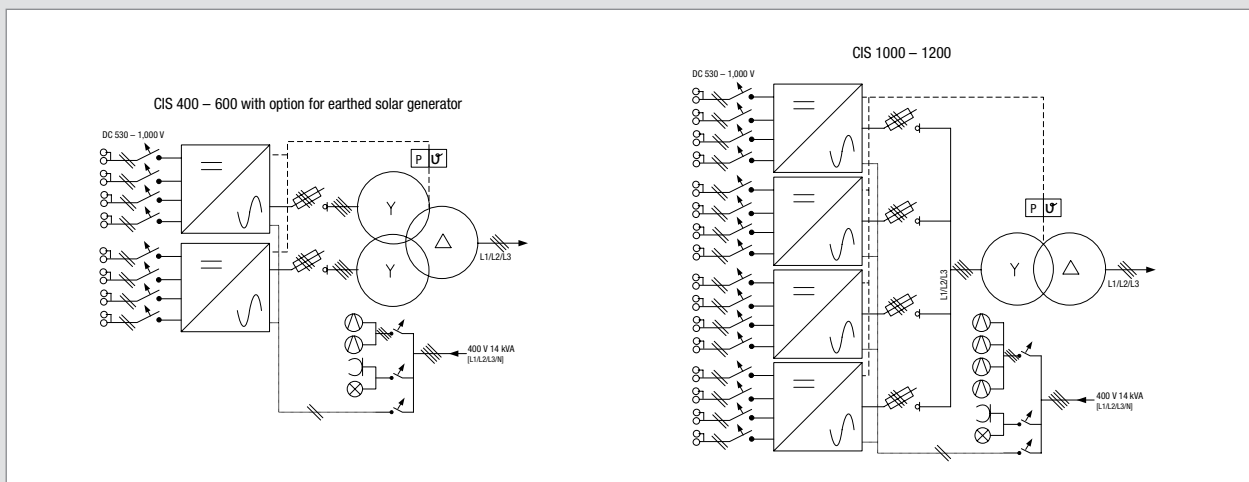


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Efficiency curve at 540 V DC ⁷



Conergy CIS	400	500	600	700	800	900	1000	1100	1200
P_{nenn}									
5%	93.1%	94.0%	95.0%	93.7%	94.4%	95.0%	94.0%	94.6%	95.0%
10%	96.0%	96.4%	96.8%	96.3%	96.6%	96.8%	96.4%	96.6%	96.8%
20%	96.8%	97.2%	97.5%	97.0%	97.3%	97.5%	97.2%	97.3%	97.5%
25%	97.9%	98.0%	98.2%	98.0%	98.1%	98.2%	98.0%	98.1%	98.2%
30%	97.9%	98.0%	98.0%	97.9%	98.0%	98.0%	98.0%	98.0%	98.0%
50%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%
75%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%	98.1%
100%	97.8%	97.7%	97.6%	97.8%	97.7%	97.6%	97.7%	97.7%	97.6%



⁷ With AC/DC rated voltage, Cos φ = 1 and external power supply

Supplier: