

Sirio Central Inverters



HIGHLIGHTS

- **Low frequency isolation transformer**
- **Full nominal power up to 45°C**
- **Colour LCD touch screen display with datalogger functions**
- **Suitable for operation with modules that require grounding a pole**

Sirio Central three-phase inverters provide a direct connection to the low voltage grid, ensuring their galvanic separation from the direct current plant. The generous dimensions of the transformer and the other components of the inverter provides high conversion efficiency and guarantees one of the highest efficiencies among machines of the same category.

ENERGY AND SAFETY AT THE HIGHEST LEVEL

The Maximum Power Point Tracking (MPPT) algorithm implemented in the control system of Sirio Central inverters enables full use of the photovoltaic generator in any radiation and temperature conditions, making the plant work constantly at maximum efficiency. In the absence of solar radiation, the converter goes on standby and resumes normal operation when there is radiation again. This feature reduces self-consumption to a minimum and maximises energy efficiency. The use of speed-controlled fans helps to optimise the overall efficiency of the inverter. Temperature-linked fan operation also increases the expected lifespan and reduces costs incurred for non-routine

maintenance. All these design features, the careful choice of components and guaranteed quality of production according to ISO9001 standards make the Sirio Central three-phase inverters extremely efficient and reliable and guarantees maximum energy production.

THERMAL DERATING

Derating depending on temperature is aimed at safeguarding against overheating inverter semiconductors in environments where the temperature exceeds installation specifications or for forced ventilation faults, without causing a complete shutdown of the inverter itself. Sirio Central models ensure a nominal power output at up to 45°C ambient. If this threshold is exceeded, the inverter gradually decreases the power fed into the network, so as to maintain heat sink temperature within the maximum limit. Once back in the thermal range of normal operation, the inverter restores the optimal working point, again ensuring maximum power transfer.

EASY INSTALLATION AND MAINTENANCE

The overall dimensions are greatly reduced;

indeed, it is not necessary to provide for any space at the sides of the equipment for maintenance, since the electronics and the power components have complete front access. Fully automatic operation ensures ease of use and facilitates installation, reducing the likelihood of configuration errors, which could lead to failures or reduced plant productivity.

CUSTOMISED SOLUTIONS

On request, Riello Solartech can supply Sirio Central inverters configured according to the customer's needs. Available options include the pole/ground connection kit (positive or negative) required for some kinds of photovoltaic modules.

USER INTERFACE

Sirio Central inverters are fitted as standard with a new user interface consisting of a colour LCD touchscreen in a convenient 7" format. The millions of colours and quantity of features greatly enrich the user's experience of interaction with the solar inverter.

Intuitive icons and brief messages in the set language guide users through the simple menu structure, providing them with access to all reference, configuration and inverter control features. In particular, it is possible to view a daily energy production graph and the instantaneous value of power produced, verify module temperatures and the measurements of any installed analogue sensors.

The archive section provides a view and analysis of historical data, cross-checking measurements as desired (no longer two variables at a time). By scrolling a finger along the screen, users can query values recorded on previous days, including in monthly or annual intervals, and the graphs displayed can be sent via e-mail. Internal storage enables the archiving of about 5 years of data (however, if necessary, it is possible to delete previous years by means of a special function). Historical data produced by the inverter and the system card can be saved on a USB flash drive.

The device also enables users to change the €/kWh ratio, adjust display brightness, change the system date and time, assign an identification and label to the plant it belongs to, configure and customise up to 4 external analogue sensors. It also enables the sending of e-mails (the frequency of which can be set) with production data and graphs and, in the case of abnormalities, any malfunction or ignition failure alarms. Finally, via special counters in the Info section, users can consult data on total produced energy, overall hours of operation,

economic return of the plant and other technical parameters, including the amount of memory used for historical data. The graphic interface is available in Italian, English, French, Spanish and German.

NETWORK ACCESS

The touchscreen device offers many communication possibilities when connected to a local network. The inverter is compatible both with the PVSER proprietary protocol on the network and with ModBUS/TCP, thus offering easy addition to any management BMS or data analysis via an Ethernet network. Moreover, with a freeware program (VNC), users can remotely view the inverter screen or interact with it from their computer or mobile device.

COMMUNICATIONS

DISPLAY

Colour LCD touchscreen

COMMUNICATION INTERFACE

Ethernet, USB, 2xRS232, 2 inputs for remote controls (inverter trip and EPO) and 3 operating status signal relays. Optional RS485 and ModBUS RTU (slot version)

PROTOCOL

ModBUS / TCP

OPTIONS

ACCESSORIES

RS485

ModCOM PV

Power Reducer Kit

MODEL	SIRIO K64	SIRIO K80	SIRIO K100	SIRIO K200
INPUT				
PV max power (Pmax) [kWp]	80	100	125	250
Recommended PV min power (Pmin) [kWp]	55	70	50	170
Voltage @recommended STC (Vo) [V]	540 - 640			
DC voltage range, MPPT (Vdc) [V]	330 - 700			
Max DC voltage (Vdc, max) [V]	800			
Start-up voltage (Vstart-up) [V]	390			
Max short circuit current (Icc, max) [A]	205	260	320	650
Ripple voltage on modules [%]	<1			
Short circuit inputs (in parallel)	1			
OUTPUT				
Nominal AC power (p.f. =1) (Pca) [kW]	64	80	100	200
Max AC power (Pca 1h) [kW]	71	88	110	220
Nominal voltage (Vac) [V]	400 three-phase (+ / -15%)			
Rated current (Ica) [Aca]	92	115	145	289
Maximum current (Ica) [Aca]	117	146	182	364
Nominal frequency (Fca) [Hz]	50 (+2 / -3)			
Distribution system	TT, TN-S, TN-C			
Mains current harmonic distortion (THDi) [%]	<3 with nominal power			
Power factor (cosϕ) [%]	>0.99 (adjustable ± 0.9)			
Short circuit current contribution (Icc) [A]	175	219	274	434
STANDARDS				
Electromagnetic compatibility	Yes			
EC Conformity	Yes			
ENVIRONMENTAL PROTECTIONS AND CONDITIONS				
Protection level EN60529	IP20			
Environmental category	Indoors, not air conditioned			
Overvoltage category (EN62109)	II (DC) - III (AC)			
Pollution degree	3			
Permissible temp. range (T) [°C]	-10 to 50			
Non-condensing relative humidity range [%]	5 to 95			
Maximum operating altitude [m]	1000			
Air change (with deltaT=5 °C) [m³/h]	1760	2400	3300	6450
Air flow direction	Suction through base and front. Expulsion from roof			
Maximum dissipated power (P loss) [W - KCal/h]	2866 - 2450	3821 - 3266	5231 - 4471	10598
MECHANICAL				
Weight [kg]	600	650	720	1580
Dimensions (WxDxH) [mm]	800x800x1900			1600x1000x1900

MODEL	SIRIO K64 HV	SIRIO K80 HV	SIRIO K100 HV	SIRIO K200 HV	SIRIO K250 HV
INPUT					
PV max power (Pmax) [kWp]	80	100	125	250	320
Recommended PV min power (Pmin) [kWp]	55	70	80	170	220
Voltage @recommended STC (Vo) [V]	710 - 760				
DC voltage range, MPPT (Vdc) [V]	450 - 760				
Max DC voltage (Vdc, max) [V]	880				
Start-up voltage (Vstart-up) [V]	540				
Max short circuit current (Icc, max) [A]	157	196	245	500	620
Ripple voltage on modules [%]	<1				
Short circuit inputs (in parallel)	1				
OUTPUT					
Nominal AC power (p.f. =1) (Pca) [kW]	64	80	100	200	250
Max AC power (Pca 1h) [kW]	71	88	110	220	250
Nominal voltage (Vac) [V]	400 three-phase (+ / -15%)				
Rated current (Ica) [Aca]	92	115	145	289	361
Maximum current (Ica) [Aca]	117	146	182	364	420
Nominal frequency (Fca) [Hz]	50 (+2 / -3)				
Distribution system	TT, TN-S, TN-C				
Mains current harmonic distortion (THDi) [%]	<3 with nominal power				
Power factor (cosϕ) [%]	>0.99 (adjustable ± 0.9)				
Short circuit current contribution (Icc) [A]	175	219	274	434	542
STANDARDS					
Electromagnetic compatibility	Yes				
EC Conformity	Yes				
ENVIRONMENTAL PROTECTIONS AND CONDITIONS					
Protection level EN60529	IP20				
Environmental category	Indoors, not air conditioned				
Overvoltage category (EN62109)	II (DC) - III (AC)				
Pollution degree	3				
Permissible temp. range (T) [°C]	-10 to 50				
Non-condensing relative humidity range [%]	5 to 95				
Maximum operating altitude [m]	1000				
Air change (with deltaT=5 °C) [m³/h]	1760	2400	3300	6450	7650
Air flow direction	Suction through base and front. Expulsion from roof				
Maximum dissipated power (P loss) [W - KCal/h]	2866 - 2450	3821 - 3266	5231 - 4471	10598	12359
MECHANICAL					
Weight [kg]	600	650	720	1580	1750
Dimensions (WxDxH) [mm]	800x800x1900			1600x1000x1900	



Sirio Central Inverters

MV



HIGHLIGHTS

- **No isolation transformer**
- **Made for direct connection to LV/MV transformers**
- **High conversion efficiency**
- **Full nominal power up to 45°C**
- **Colour LCD touch screen display with datalogger functions**

To increase overall plant efficiency, Sirio MV three-phase Central Inverters do not include a built-in transformer.

This feature and the meticulous design make them ideal for use in medium-high power plants connected to a medium voltage grid.

ENERGY AND SAFETY AT THE HIGHEST LEVEL

The Maximum Power Point Tracking (MPPT) algorithm implemented in the control system of Sirio Central inverters enables full use of the photovoltaic generator in any radiation and temperature conditions, making the plant work constantly at maximum efficiency. In the absence of solar radiation, the converter goes on standby and resumes normal operation when there is radiation again.

This feature reduces self-consumption to a minimum and maximises energy efficiency. The use of speed-controlled fans helps to optimise the overall efficiency of the inverter.

To ensure higher standards of safety and fire prevention in case of an internal fault in the converter, the Sirio K330, K500 and K800 units are fitted as standard with a

motorised cut-off switch on the DC side with undervoltage protection. Moreover, the presence of 6, 8 and 16 inputs respectively, protected by fuses placed on both poles, ensures the protection of the lines coming from field switchboards; this arrangement allows avoiding secondary level switchboards (DC-Boxes) during the design phase, with consequent cost savings. Temperature-linked fan operation also increases the expected lifespan and reduces costs incurred for non-routine maintenance.

All these design features, the careful choice of components and guaranteed quality of production according to ISO9001 standards make the Sirio Central three-phase inverters extremely efficient and reliable and guarantees maximum energy production.

THERMAL DERATING

Derating depending on temperature is aimed at safeguarding against overheating inverter semiconductors in environments where the temperature exceeds installation specifications or for forced ventilation faults, without causing a complete shutdown of the inverter itself.

Sirio Central models ensure a nominal power output at up to 45°C ambient. If this threshold is exceeded, the inverter gradually decreases the power fed into the network, so as to maintain heat sink temperature within the maximum limit.

Once back in the thermal range of normal operation, the inverter restores the optimal working point, again ensuring maximum power transfer.

USER INTERFACE

Sirio Central inverters are fitted as standard with a new user interface consisting of a colour LCD touchscreen in a convenient 7" format. The millions of colours and quantity of features greatly enrich the user's experience of interaction with the solar inverter.

EASY INSTALLATION AND MAINTENANCE

The greatly reduced overall dimensions for this power class mean it is not necessary to provide for any space at the side or back of the equipment for maintenance, since the electronics and the power components have complete front access.

Fully automatic operation ensures ease of use and facilitates installation, thus avoiding installation and configuration errors, which could lead to failures or reduced productivity of the plant.

CUSTOMISED SOLUTIONS

On request, Riello Solartech can supply Sirio Central inverters configured according to the customer's needs. Available options include the pole/ground connection kit (positive or negative) required for some kinds of photovoltaic modules.

COMMUNICATIONS

DISPLAY

Colour LCD touchscreen

COMMUNICATION INTERFACE

Ethernet, USB, 2xRS232, 2 inputs for remote controls (inverter trip and EPO) and 3 operating status signal relays. Optional RS485 and ModBUS RTU (slot version)

PROTOCOL

ModBUS / TCP

OPTIONS

ACCESSORIES

RS485

ModCOM PV

Power Reducer Kit



MODEL	SIRIO K64 HV-MT	SIRIO K80 HV-MT	SIRIO K100 HV-MT	SIRIO K200 HV-MT	SIRIO K250 HV-MT
Nominal power [kW]	64	80	100	200	250
INPUT					
PV max power (Pmax) [kWp]	80	100	125	230	290
Recommended PV minimum power (Pmin) [kWp]	50	64	80	160	200
Voltage @recommended STC (Vo) [V]	710 - 760				
DC voltage range, MPPT (Vdc) [V]	450 - 760				
Max DC voltage (Vdc, max) [V]	880				
Start-up voltage (Vstart-up) [V]	540				
Max short circuit current (Icc, max) [A]	157	196	245	471	590
Ripple voltage on modules [%]	<1				
Short circuit inputs	1				
OUTPUT					
Nominal AC power (p.f. =1) (Pca) [kW]	64	80	100	200	250
Nominal voltage (Vac) [V]	270 three-phase (+/- 15%)				
Rated current (Ica) [Aca]	137	171	214	428	535
Maximum current (Ica) [Aca]	178	221	277	475	630
Nominal frequency (Fca) [Hz]	50 (+2 / -3)				
Distribution system	IT				
Mains current harmonic distortion (THDi) [%]	<3 with nominal power				
Power factor (cos ϕ) [%]	>0.99 (adjustable $\pm$ 0.9)				
Short circuit current contribution (Icc) [A]	267	331	415	813	945
STANDARDS					
Electromagnetic compatibility	Yes				
EC Conformity	Yes				
ENVIRONMENTAL PROTECTIONS AND CONDITIONS					
Protection level EN60529	IP20				
Environmental category	Indoors, not air conditioned				
Overvoltage category (EN62109)	III (DC) - III (AC)				
Pollution degree	3				
Permissible temperature range (T) [°C]	-20 to 50				
Maximum operating altitude [m]	1000				
Air change (with deltaT=5 °C) [m³/h]	1020	1271	1600	3180	4750
Air flow direction	Suction through base and front. Expulsion from roof				
Maximum dissipated power (overload) (P loss) [W - KCal/h]	1641 - 1402	2051 - 1752	2564 - 2190	5128 - 4381	6410 - 5477
MECHANICAL					
Weight [kg]	380	400	420	1000	1050
Dimensions (WxDxH) [mm]	800x800x1900			1600x1000x1900	

MODEL	SIRIO K330 HV-MT	SIRIO K500 HV-MT	SIRIO K330 HHV-MT	SIRIO K500 HHV-MT	SIRIO K800 HHV-MT
Nominal power [kW]	330	500	330	500	800
INPUT					
PV max power (Pmax) [kWp]	380	570	380	570	880
Recommended PV minimum power (Pmin) [kWp]	260	400	260	400	500
Voltage @recommended STC (Vo) [V]	710 - 760		780 - 880		
DC voltage range, MPPT (Vdc) [V]	450 - 760		530 - 820		
Max DC voltage (Vdc, max) [V]	1000				
Start-up voltage (Vstart-up) [V]	540		600		
Max short circuit current (Icc, max) [A]	780	1180	660	1000	1600
Ripple voltage on modules [%]	<1				
Short circuit inputs	6 x 140 A (OPT)	8 x 140 A (OPT)	6 x 140 A (OPT)	8 x 140 A (OPT)	1 (optional up to 20 x 160 A with fuses)
OUTPUT					
Nominal AC power (p.f. =1) (Pca) [kW]	330	500	330	500	800
Nominal voltage (Vac) [V]	270 three-phase (+/- 15%)		320 three-phase (+/- 15%)		
Rated current (Ica) [Aca]	706	1070	600	905	1450
Maximum current (Ica) [Aca]	830	1260	706	1065	1600
Nominal frequency (Fca) [Hz]	50 (+2 / -3)				
Distribution system	IT				
Mains current harmonic distortion (THDi) [%]	<3 with nominal power				
Power factor (cosϕ) [%]	>0.99 (adjustable ± 0.9)				
Short circuit current contribution (Icc) [A]	1250	1890	900	1600	2175
STANDARDS					
Electromagnetic compatibility	Yes				
EC Conformity	Yes				
ENVIRONMENTAL PROTECTIONS AND CONDITIONS					
Protection level EN60529	IP20				
Environmental category	Indoors, not air conditioned				
Overvoltage category (EN62109)	III (DC) - III (AC)				
Pollution degree	3				
Permissible temperature range (T) [°C]	-20 to 50				
Maximum operating altitude [m]	1000				
Air change (with deltaT=5 °C) [m³/h]	6200	9500	5240	7940	12700
Air flow direction	Suction through base and front. Expulsion from roof				
Maximum dissipated power (overload) (P loss) [W - KCal/h]	8460 - 7230	12820 - 10954	6600 - 7725	10000 - 11700	16000 - 18725
MECHANICAL					
Weight [kg]	1250	1320	1000	1400	1380 + 200 (DC BOX)
Dimensions (WxDxH) [mm]	1500x1000x1900				1500x1000x1900 + 600x1000x1900 DC BOX

The product photos are merely an indication. Due to technical and/or regulatory updates, the product features may change at any time without notice.

