


00	Progetto Definitivo			18/09/2023		MZZ	
Voltalia Italia S.r.l. Viale Montenero, 32 Milano (MI) - 20135 - Italia		Tel. +39 02 89095269 info.italia@voltalia.com www.voltalia.it					
DISEGNATO: MZZ	CONTROLLATO: VCC	APPROVATO: VCC					
SCALA:	DATA: 18/09/2023	FOGLIO: 001/001	FORMATO A4	IL PRESENTE DOCUMENTO E' DI NOSTRA PROPRIETA' E NON PUO' ESSERE RIPRODOTTO O INVIATO SENZA LA NOSTRA AUTORIZZAZIONE.		00	
COMUNE DI MESAGNE (BR) - COMUNE DI BRINDISI (BR) PROGETTO: <i>Progetto definitivo di un impianto per la produzione di energia elettrica da fonte solare con potenza di immissione in rete di 12,50 MW, e 15,00 MW di storage da realizzarsi nel comune di Mesagne (BR), località Madonna delle Grazie snc e limitatamente alle opere di connessione alla rete anche nel comune di Brindisi (BR)</i>				Documento N.			
TITOLO: SCHEDE TECNICHE				DEV-PLN-040-00-IT-S-MSA01-IT			

Hi-MO 6

Explorer

LR5-72HTH 560~580M

- Suitable for Distribution Market
- Simple design embodies modern style
- Better energy generation performance
- High-quality module guarantees long-term reliability



15-year Warranty for
Materials and Processing



25-year Warranty for Extra
Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

LONGI



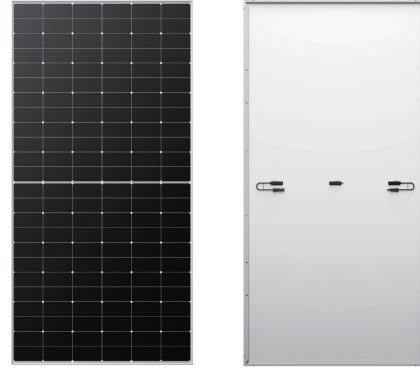
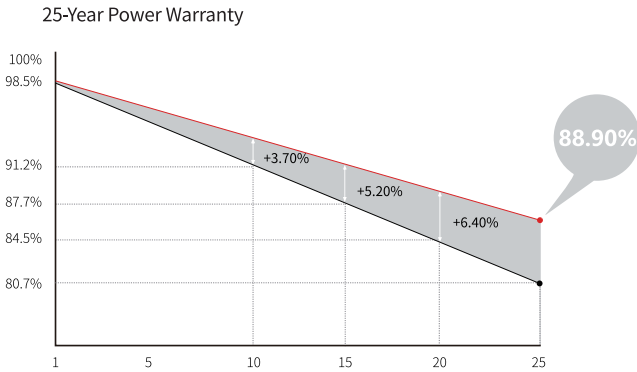
22.5%
MAX MODULE
EFFICIENCY

0~3%
POWER
TOLERANCE

<1.5%
FIRST YEAR
POWER DEGRADATION

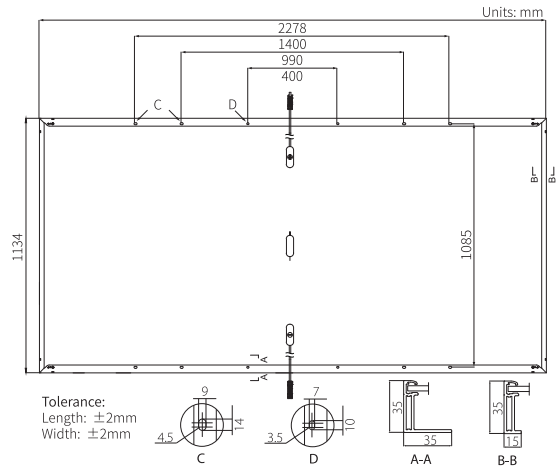
0.40%
YEAR 2-25
POWER DEGRADATION

Additional Value



Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm ² , +400, -200mm/±1400mm length can be customized
Glass	Single glass, 3.2mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	27.5kg
Dimension	2278×1134×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 620pcs per 40' HC



Electrical Characteristics

STC : AM1.5 1000W/m² 25°C

NOCT : AM1.5 800W/m² 20°C 1m/s

Test uncertainty for Pmax: ±3%

Module Type	LR5-72HTH-560M		LR5-72HTH-565M		LR5-72HTH-570M		LR5-72HTH-575M		LR5-72HTH-580M	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	560	418	565	422	570	426	575	430	580	433
Open Circuit Voltage (Voc/V)	51.61	48.46	51.76	48.60	51.91	48.74	52.06	48.88	52.21	49.02
Short Circuit Current (Isc/A)	13.94	11.26	14.01	11.31	14.07	11.36	14.14	11.42	14.20	11.47
Voltage at Maximum Power (Vmp/V)	43.46	39.66	43.61	39.79	43.76	39.93	43.91	40.07	44.06	40.20
Current at Maximum Power (Imp/A)	12.89	10.55	12.96	10.61	13.03	10.67	13.10	10.72	13.17	10.78
Module Efficiency(%)	21.7		21.9		22.1		22.3		22.5	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 1 or 2 IEC Class C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.230%/°C
Temperature Coefficient of Pmax	-0.290%/°C

TRACKER Agile™-1P

Dual-Row

TrinaTracker



About TrinaTracker

Excellent Bankability

Trina Solar was ranked top in the list of "Top Bankable Module Supplier" released by Bloomberg New Energy Finance (BNF) for five consecutive years

Multiple Product Lines For All Applications

Multiple product lines developed by experienced International R&D team for meeting market demands in all application scenarios

Superb Reliability and High Quality

Leading quality management system and over 20 years product quality control experience in the industry

Efficient Engineering Design Expert

Systematic and high efficient workflow for presales service to guarantee prompt engineering design

Unified Products Delivery Management

Global supply chain management of core equipments in solar farm (modules and trackers) with unified delivery channel



Two Rows per Tracker

Agile™-1P is a dual-row tracker with one primary slewing drive in one row and one secondary slewing drive in another row. Two slewing drives share one motor and one TCU.



Innovative SuperTrack Technology

According to real-time weather and actual terrain conditions, smart algorithm dynamically optimizes tracking angle, increases receiving radiation and reduces shading loss.

Up to **8%** yield gain



More Modules per Tracker

By adopting one in portrait (1P) design, Agile can install up to 60 modules per row.

Compatible with modules up to **670W+**



Designed for Challenging Conditions

The Agile™-1P has been designed for sites that have both challenging terrain and high wind conditions

Up to **20%** N-S slope.



Higher Reliability

The two slewing drives in Agile™-1P are connected by a transmission bar with a cardan design that improves the transmission efficiency, also has an optimized stow position and alarm strategy for a safer and more robust structure.

TRINA CLAMP

Trina Clamp is a proprietary product that is quick and easy to use with the 1P configuration, reducing the installation time and costs.



WIND TUNNEL TESTED BY CPP

Detailed wind tunnel test methodology to reproduce the most realistic tracker behavior and analyze the aerolastic effects that impact tracker structures.



Full aeroelastic model test.



TECHNICAL SPECIFICATIONS

GENERAL FEATURES

Solar tracker type	Horizontal Single-Axis with two rows
Tracking range	±60° (120°)
Driver	Cardan joined slewing drive
Configuration	One module in portrait (1P) up to 2 strings per row (1500 V string)
Solar module supported	Framed
Foundation options	Direct ramming, Pre-drilling + ramming, Micropile and PHC piles
Pile section	W, compatible with IPE, IPEA, HEA and HEB ⁽¹⁾
Modules attachment	Bolts, Rivets, Clamps (frameless)
Piles per MW (550Wp module)	~273 piles/MW ⁽²⁾ (60 modules per row)
(670 Wp module)	~248 piles/MW ⁽²⁾ (54 modules per row)
Terrain adaptability	20% N-S, 10% E-W ⁽³⁾
Wind and snow loads tolerance	Tailored to site requirement
Rear shading factor	1.27%
Critical wind speed	47m/s

STRUCTURE

Material	High Yield Strength Steel
Coating	HDG, Pregalvanized & ZM ⁽⁴⁾

ELECTRONIC CONTROLLER SPECIFICATIONS

Controller	Electronic board with microprocessor
Ingress protection marking	IP65
Tracking method	Astronomical algorithms + SuperTrack technology ⁽⁵⁾
Advanced wind control	Customizable
Anemometer	Cup / Ultrasonic
Night-time stow	Configurable
Communication with the tracker	Wired option: RS 485 Wireless option: LoRa/Zigbee
Operating conditions	Altitude < 4000 m ⁽⁶⁾ Temperature: -30°C to 60°C
Sensors	Digital inclinometer
Power (motor drive)	DC motor: 0.15kW ⁽⁷⁾
Power supply	Grid connection / String powered / Self-powered

WARRANTY

Structure	10 years
Driver and control components	5 years

(1) C shape piles under request

(2) Depending on layout

(3) N-S: max 20%, for slopes higher than 10% consult with TrinaTracker
E-W: max 10%, for slopes higher than 5% consult with TrinaTracker

(4) Standard configuration. Other coating under request, please consult TrinaTracker

(5) Includes smart tracking algorithm and smart backtracking algorithm

(6) Different conditions under request, please consult TrinaTracker

(7) Depending on external conditions

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

© 2021 Trina Solar Co.,Ltd. All rights reserved. Specifications included in this datasheet are subject to change without notice.

Version number: DT-T-0003 B

Technical Specifications

Efficiency	
Max. Efficiency	≥99.0%
European Efficiency	≥98.8%
Input	
Max. Input Voltage	1,500 V
Number of MPP Trackers	6
Max. Current per MPPT	65 A
Max. Short Circuit Current per MPPT	115 A
Max. PV Inputs per MPPT	4/5/5/4/5/5
Start Voltage	550 V
MPPT Operating Voltage Range	500 V ~ 1,500 V
Nominal Input Voltage	1,080 V
Output	
Nominal AC Active Power	300,000 W
Max. AC Apparent Power	330,000 VA
Max. AC Active Power (cosφ=1)	330,000 W
Nominal Output Voltage	800 V, 3W + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Nominal Output Current	216.6 A
Max. Output Current	238.2 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Total Harmonic Distortion	< 1%
Protection	
Smart String-Level Disconnect(SSLD)	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
AC Grounding Fault Protection	Yes
Residual Current Monitoring Unit	Yes
Communication	
Display	LED Indicators, WLAN + APP
USB	Yes
MBUS	Yes
RS485	Yes
General	
Dimensions (W x H x D)	1,048 x 732 x 395 mm
Weight (with mounting plate)	≤112 kg
Operating Temperature Range	-25 °C ~ 60 °C
Cooling Method	Smart Air Cooling
Max. Operating Altitude without Derating	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP66
Topology	Transformerless

ES1000i

1000Vdc Inverter Battery Energy Storage

Nidec

All for dreams



Typical Users

- Solar & Wind Farm Operators
- Power Producers
- Transmission & Distribution System Operators
- Smart Microgrids

Advantages

- Max Efficiency: 98.84%
- EU Efficiency: 98.62%
- Indoor or outdoor application
- Effective integration of renewable sources
- Seamless integration

Nidec

ES1000

Ensure stable power supply with active grid support for greater reliability and efficiency

The basic building block of our Power Conversion Systems for Battery Energy Storage is our very own Active Front End inverter technology. The ES1000i was specifically designed for smart storage & microgrids. These multilevel inverters offer greater efficiency (European efficiency 98.62%, maximum efficiency 98.84%)

General Overview

Nidec has more than forty years of experience in the design and manufacture of inverters and Power Quality solutions. The ES1000i, our next generation smart inverter, is the building block of our advanced Power Conversion Systems (PCS) for Battery Energy Storage and smart microgrids. Thanks to its modular design we can quickly configure Power Conversion Systems for both large commercial & industrial plants as well as utility scale units with one of the highest power densities available on the market. This translates into very compact solutions that can be installed with minimal space requirements. Our PCS come in two standard configurations: the **Town & Country** and the **Urban Compact**.

ES1000:Town & Country – a modular cabinet based solution for internal and external installations (cabinets are NEMA 3R for external installation)

ES1000:Urban Compact – a fully containerized plug and play solution available in either 20' or 40' containers according to power requirements.

Specifically designed with the grid in mind

All of our Power Conversion Systems offer bi-directional power conversion and can be configured for both on-grid and off-grid use. Thanks to the sophisticated algorithms and open control platform the PCS seamlessly integrate with any Battery management System (BMS) regardless of type or brand. The PCS consists of fully integrated inverter, control system, transformer and switch gear (where needed) and was specifically designed to maximize grid performance offering primary, secondary and tertiary frequency regulation.

Enhanced grid availability

Primary frequency regulation can be met by either droop control or in isochronous mode, emulating a diesel generator. Furthermore, the PCS provides short circuit capability by injecting a controlled current whenever a short occurs, giving the grid's protection system time to react in order to avoid black outs. These parameters can be set to meet local grid standards and regulations.

INDUSTRIAL SOLUTIONS

Technical Data ES1000i

1000Vdc inverter for Battery Energy Storage

Real time control

One of the key features on our systems is their advanced control system which allows real-time control and includes functions for energy management as well as full power control, making it the ideal choice not only for primary frequency regulation but also for integrating renewables, like wind and solar, to the grid. The system allows for local and remote access and contains a full set of diagnostic tools for predictive and preventive maintenance including historic data logger and performance reports. It also seamlessly interfaces with existing control platforms which is key asset for power producers and grid operators.

The ES1000 series is designed to support the following functions:

- Black start operation
- Frequency regulation
- Voltage regulation
- Load balancing
- Peak shaving
- Spinning reserve
- Load levelling
- Demand management
- Load prioritization



Inverter size	Rated Power $T_{(RAW_WATER)=40^{\circ}C}$ (1)	AC Rated Voltage	DC Voltage Range	Maximum DC Voltage	DC Max Power $T_{(RAW_WATER)=40^{\circ}C}$ (2)
	[kW]				[V _{rms}]
ES645W38	540	320	485÷1000	1100	553
	645	380	575÷1000		657
ES1K3W38	1080	320	485÷1000	1100	1106
	1290	380	575÷1000		1314
ES1K9W38	1620	320	485÷1000	1100	1660
	1935	380	575÷1000		1971

(1) @ $\cos\phi=1$

(2) Inverter is water cooled

Environmental Conditions	Characteristics
Installation	Indoor
Degree of protection	IP31 – NEMA 1
Working temperature	-20° + 40° C
Storage temperature	-20° + 70° C
Altitude	≤2000 m a.s.l. (4000 with de-rating)
Relative umidity	5%÷85% (non condensing)
Painting cycle	Standard cycle category
Pollution degree	2

Electrical Data	Characteristics
Rated AC Voltage	320/380 Vac
Rated Frequency	50÷60 Hz
THDi	≤3% @ P _{nom}
Distribution system	IT – Unearthed
European efficiency	98.62%

TSD2017.09.01.00EN-US_ES1000