

# Trina smart

## THE OPTIMIZED SOLUTION TSM-DC05A.082



### 60 CELL

MONOCRYSTALLINE MODULE

### 265–275W

POWER OUTPUT RANGE

### 16.8%

MAXIMUM EFFICIENCY

### FULLY INTEGRATED SMART SOLUTION

#### TRINA SOLAR: A STRONG AND RELIABLE PARTNER

As a leading global manufacturer of next generation photovoltaic products, Trina Solar is committed to building mutually beneficial alliances with installers, developers, distributors and technological partners as the backbone of our shared goal to drive Smart Energy Together. Thanks to an extensive sales and service network with local expert teams throughout Europe, Trina Solar is perfectly positioned to support your needs. With Trina Solar as your strong, bankable partner you can rest assured knowing that you've made the right choice.

[www.trinasolar.com](http://www.trinasolar.com)



#### Safer Solar

- Panel-level disconnect to remotely deactivate module power
- Arc, fire and safety hazard mitigation



#### More Efficient O&M

- Panel-level monitoring to pinpoint problems
- Detailed real-time alerts and analytics



#### Highest Power Density

- Install more modules on any given roof
- Uneven string length enables design flexibility



#### Maximized Energy Harvest

- Impedance matching technology eliminates mismatch losses
- More power from each module bin



#### Lower BOS Costs thanks to Smart Curve Technology

- Up to 30% lower max open circuit voltage, 30% longer strings
- Fewer combiners, fuses and copper wiring required

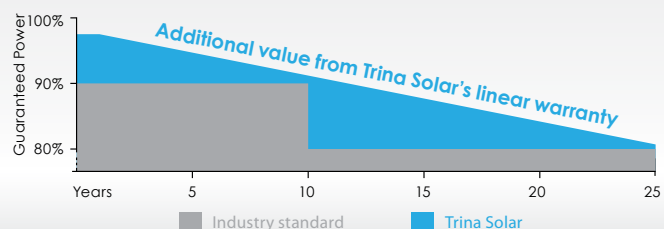


#### Fully Module Integrated

- No additional boxes to mount to a module
- Complete manufacturer warranty from Trina Solar

### LINEAR PERFORMANCE WARRANTY

10 Year Product Warranty • 25 Year Linear Power Warranty

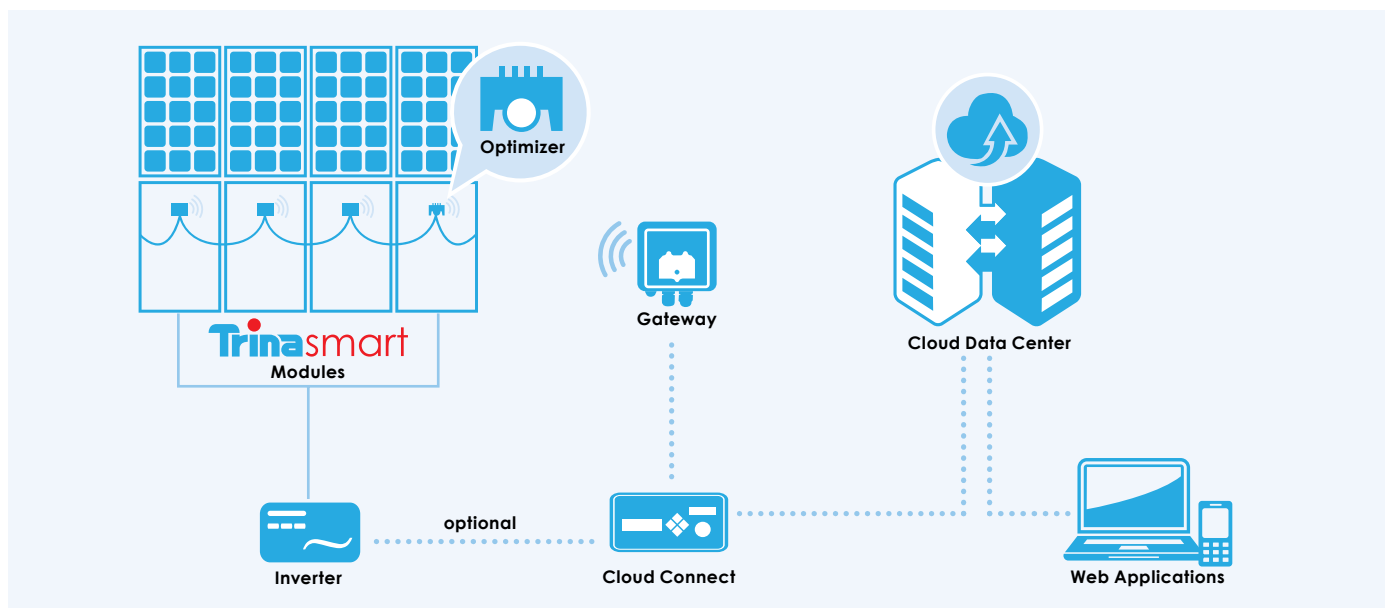


Trinasmart modules incorporate innovative power electronics from Tigo Energy to achieve module-level diagnostics, maximum energy harvest through module level DC power optimization, and reduction of arc, fire and safety hazards.

Integration of the module optimizer into the junction box enables patented Smart Curve technology, which allows up to 30% longer strings and significant balance-of-system (BOS) savings.

## SYSTEM ARCHITECTURE

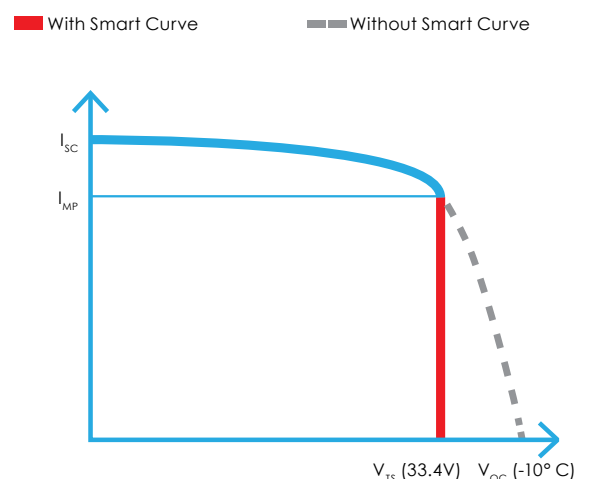
Trinasmart system components work together with many common inverters\* to maximize energy harvest. Trinasmart modules communicate wirelessly through the gateway, allowing users to monitor system performance in real time.



## SMART CURVE TECHNOLOGY

Module-integrated Trinasmart technology reduces the open circuit voltage range for each module and allows longer strings to be designed. The maximum voltage is programmed by Trina Solar in the factory at 33.4V.

- Hardware voltage clamp prevents over-voltage
- Design up to 30% longer strings
- Fewer combiner boxes, fuses and wiring
- Smaller resistance losses
- TUV & CSA certified



## CLOUD CONNECT (CC)

The Cloud Connect controls processes in real time and sends data to a remote server for monitoring.

SPECIFICATIONS ONE UNIT SUPPORTS UP TO 360 TRINASMART MODULES		
Communication	Data Backhaul	Ethernet or Wi-Fi
	On-Screen Prompts	Module (power, voltage, signal), Internet check, basic troubleshooting
	PV-Safe	Button deactivates the array at module level
	Accessories	Pull data from most meters and accessories that speak Modbus (i.e. external power switch-off triggers, fleet management tools)
	Inverter Data	Can pull data from most inverters (SMA, Power One, Fronius, Kaco etc.)
Power	Compatibility	110 / 230 V compatible converter (comes with international plugs)
Mechanical Specifications	Dimensions (L x W x H)	255,5 x 226 x 125 mm
	Weight	0.5 kg
	Environmental Rating	Indoor NEMA 1
	Operating Temperature	-20° to +60°C



**Cloud Connect (CC)**  
This unit manages up to 360 Trinasmart modules.

## GATEWAY

The Gateway provides wireless communication with up to 120 Trinasmart modules and the CC. Up to seven Gateways can be connected to a single CC .

GATEWAY SPECIFICATIONS		
MMU Communications	Wireless (802.15)	
	RS-485 cable connection; in series with other Gateways	
Mounting Location	Center of array - wireless range limits distance from module	
Mounting Method	Mounted to module frame or rack Clips included for frame mounting	
Wireless Range	15m line-of-sight	
Maximum number of Trinasmart modules per Gateway	120	
Mechanical Specifications	Dimensions	141.3 x 48.5 x 33.3 mm (with bracket)
	Weight	0.9 kg
	Operating temperature range	-30°C to +70°C
	Enclosure environmental rating	IP 65



**An Internet connection and a Gateway are required for full system functionality.**

The wireless communications system is FCC and CE Class 2 certified. Fixing hole comes with a M3.5X6 SST pan head screw.

## MONITORING SERVICE

Trinasmart monitoring provides total insight into the performance of any system. Module-level monitoring is included free with Trinasmart. You can choose to upgrade online\* once your system is installed.

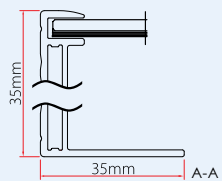
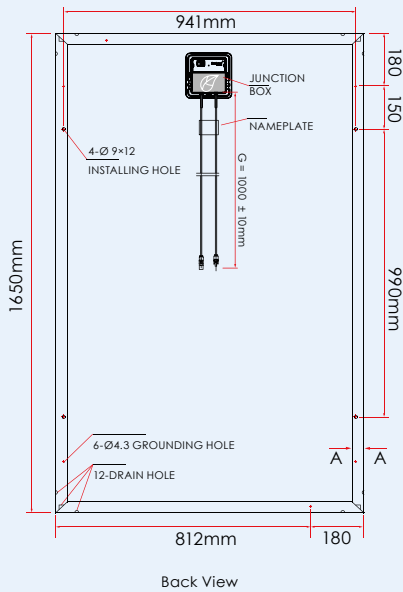


Explore the monitoring portal at [www.trinasmart.com](http://www.trinasmart.com)

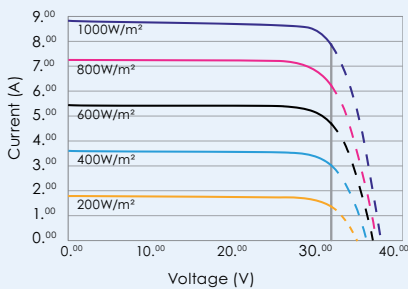
FEATURES	FREE	PREMIUM*
Reports	Monthly	Daily
1-Min Data Granularity	current & previous month	Full History
Full History	•	•
Safety Alerts	•	•
Dashboard Showing Environmental Impact	•	•
Performance Analytics		•
Trending Data Charts		•
Ability To Download		•
Device Integration		•
Performance Alerts		•
API Access		•

\*PREMIUM monitoring provided by Tigo Energy

**DIMENSIONS OF PV MODULE  
TSM-DC05A.082**



**I-V CURVES OF PV MODULE TSM-270 DC05A.082**



**CERTIFICATIONS**

IEC61215/EN61215  
IEC61730/EN61730  
IEC 627162 PtG 1917/05.11  
IEC 61701  
DIN EN 60068-2-68 LC2  
MCS BRE PV0183



ELECTRICAL DATA @ STC	TSM-265 DC05A.082	TSM-270 DC05A.082	TSM-275 DC05A.082
Peak Power Watts- $P_{MAX}$ (Wp)	265	270	275
Power Output Tolerance- $P_{MAX}$ (W) <sup>1</sup>	0/+5	0/+5	0/+5
Maximum Power Voltage- $V_{MPP}$ (V)	30.7	30.8	31.2
Maximum Power Current- $I_{MPP}$ (A)	8.63	8.77	8.82
Open Circuit Voltage- $V_{OC}$ (V) <sup>2</sup>	33.4	33.4	33.4
Short Circuit Current- $I_{SC}$ (A) *	9.50	9.50	9.50
Module Efficiency $\eta_m$ (%)	16.2	16.5	16.8

STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5 according to EN 60904-3  
<sup>1</sup> Average power delivered by modules is guaranteed to be greater than Peak Power Watts  
<sup>2</sup> Trina<sup>smart</sup> modules automatically limit the open circuit voltage  
 \* Maximum output current of Optimizer

ELECTRICAL DATA @ NOCT	TSM-265 DC05A.082	TSM-270 DC05A.082	TSM-275 DC05A.082
Maximum Power- $P_{MAX}$ (Wp)	194	201	205
Maximum Power Voltage- $V_{MPP}$ (V)	28.5	28.6	29.0
Maximum Power Current- $I_{MPP}$ (A)	6.92	7.02	7.08
Open Circuit Voltage- $V_{OC}$ (V)	33.4	33.4	33.4
Short Circuit Current- $I_{SC}$ (A) *	9.50	9.50	9.50

NOCT: Irradiance at 800 W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1M/s.  
 \* Maximum output current of Optimizer

**MECHANICAL DATA**

Solar Cells	Monocrystalline 156 x 156 mm
Cell Orientation	60 cells (6 x 10)
Module Dimensions	1650 x 992 x 35 mm
Weight	19.0 kg
Glass	High Transparency, Anti-Reflective, AR Coated And Heat Tempered Solar Glass - 3.2 mm
Backsheet	White
Frame	Black Anodized Aluminium Alloy
J-Box	IP 65 rated
Cables	Photovoltaic Technology 4.0 mm <sup>2</sup> , 1200 mm
Connector	MC4 Compatible

**TEMPERATURE RATINGS**

Nominal Operating Cell Temperature (NOCT)	44°C (±2K)
Temperature Coefficient of $P_{MAX}$	- 0.40%/K
Temperature Coefficient of $V_{OC}$	- 0%/K
Temperature Coefficient of $I_{SC}$	0.05%/K

**MAXIMUM RATINGS**

Operational Temperature	-40 to +85°C
Maximum System Voltage	1000V DC (IEC)
Max Series Fuse Rating	15 A
Mechanical Load	5400 Pa
Wind Load	2400 Pa

**WARRANTY**

10 year Product Workmanship Warranty

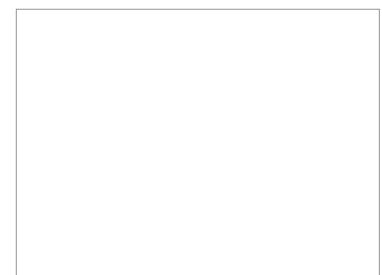
25 year Linear Performance Warranty

(Please refer to product warranty for details)

**PACKAGING CONFIGURATION**

Modules per box: 30 pieces

Modules per 40' container: 840 pieces



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