# Solar Panel Guide <br> Specification Data Sheet 

ET Solar Group<br>ET-M648BB 215-230<br>ET-M648BB 230

# We Make Solar Evolve 




25 25-year performance warranty
10 10-year warranty on materials and workmanship

## Monocrystalline Module

## ET-M648230BB 230W ET-M648225BB 225W ET-M648220BB 220W ET-M648215BB 215W

Rich Product Portfolio \& Innovative Product Strategy, satisfy customer needs to the best, and keep the customers' overall costs to the lowest.


High Conversion Efficiency
Industry-leading processing techniques realize great module efficiency to a maximum of $17.51 \%$, steady power output guaranteed.


Anti-reflective Coating and Reduce O\&M Costs
Easier to clean by rainwater to remove dirt on the glass surface, making higher power output and lower maintenance costs.

0 to +5 W Positive Tolerance
Gain more power yields than expected.

Excellent Loading Capability
2400Pa wind loads, 5400Pa snow loads.
Durable and long-lasting.

Top-quality \& Trustworthy Product
Rigorous Quality Management System built.
Multiple internationally recognized PV industry standard certifications attained.
$\square$ PV CYCLE CYC

## ELECTRICAL SPECIFICATIONS

| Model Type | ET-M648230BB | ET-M648225BB | ET-M648220BB | ET-M648215BB |
| :---: | :---: | :---: | :---: | :---: |
| Peak Power (Pmax) | 230 W | 225W | 220 W | 215W |
| Module Efficiency | 17.51\% | 17.13\% | 16.75\% | 16.37\% |
| Maximum Power Voltage (Vmp) | 25.33 V | 25.29 V | 25.21 V | 25.12 V |
| Maximum Power Current (Imp) | 9.09 A | 8.9A | 8.73A | 8.56A |
| Open Circuit Voltage (Voc) | 31.74 V | 31.41 V | 31.26 V | 30.94 V |
| Short Circuit Current (Isc) | 9.59 A | 9.23 A | 9.14 A | 9.12A |
| Power Tolerance | 0 to +5 W |  |  |  |
| Operating Temperature | $-40 \sim+85^{\circ} \mathrm{C}$ |  |  |  |
| Maximum System Voltage | DC 1000V |  |  |  |
| Nominal Operating Cell Temperature | $45 \pm 2^{\circ} \mathrm{C}$ |  |  |  |
| Fire Safety | Class C |  |  |  |
| Maximum Series Fuse Rating | 20A |  |  |  |

## MECHANICAL SPECIFICATIONS

| Cell Type | $156.75 \mathrm{~mm} \times 156.75 \mathrm{~mm}$ |
| :--- | :---: |
| Number of Cells | 48 cells in series |
| Weight | $15 \mathrm{~kg}(33.07 \mathrm{lbs})$ |
| Dimension | $1324 \times 992 \times 35 \mathrm{~mm}(52.13 \times 39.06 \times 1.38$ inch $)$ |
| Max Load | 5400 Pascals $\left(112 \mathrm{lb} / \mathrm{ft}^{2}\right)$ |
| Junction Box | $\geq 1$ P67 rated |
| Connector | MC4 Compatible |
| Output cable | PV 1-F $4 \mathrm{~mm}^{2}$ |

## PHYSICAL CHARACTERISTICS Unit:mm (inch)



TEMPERATURE COEFFICIENT

| Temp. Coeff. of Isc (TK Isc) | $0.06 \% /{ }^{\circ} \mathrm{C}$ |
| :--- | ---: |
| Temp. Coeff. of Voc (TK Voc) | $-0.30 \% /{ }^{\circ} \mathrm{C}$ |
| Temp. Coeff. of Pmax (TK Pmax) | $-0.43 \% /{ }^{\circ} \mathrm{C}$ |

PACKING MANNER

| Container | $20^{\prime} \mathrm{GP}$ | $40^{\prime} \mathrm{GP}$ |
| :--- | :---: | :---: |
| Pieces per Pallet | 30 | 30 |
| Pieces per Container | 480 | 960 |

## ELECTRICAL CHARACTERISTICS

Temperature Dependence of Isc, Voc and Pmax


Irradiance Dependence of Isc, Voc and Pmax (AM1.5,Cell Temperature $25^{\circ} \mathrm{C}$ )


Note: the specifications are obtained under the Standard Test Conditons (STCs): $1000 \mathrm{~W} / \mathrm{m}^{2}$ solar irradiance, 1.5 Air Mass, and cell temperature of $25^{\circ} \mathrm{C}$. The NOCT is obtained under the Test Conditions: $800 \mathrm{~W} / \mathrm{m}^{2}, 20^{\circ} \mathrm{C}$ ambient temperature, $1 \mathrm{~m} / \mathrm{s}$ wind speed, AM 1.5 spectrum.
Please contact support@etsolar.com for technical support. The actual transactions will be subject to the contracts. This parameters is for reference only and it is not a part of the contracts. The specifications are subject to change without prior notice.

