COMMERCIAL & INDUSTRIAL BC MODULE

# CLM-650M-72 Series — Infinite Possibilities

Premium n-type back-contact dual-glass modules for rooftop and ground-mount applications

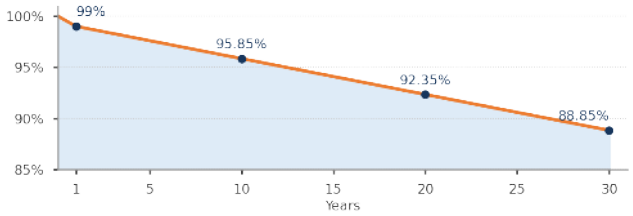
**HPBC 2.0 standard · ABC / TBC optional | OEM / ODM ready**

**640~665 W**

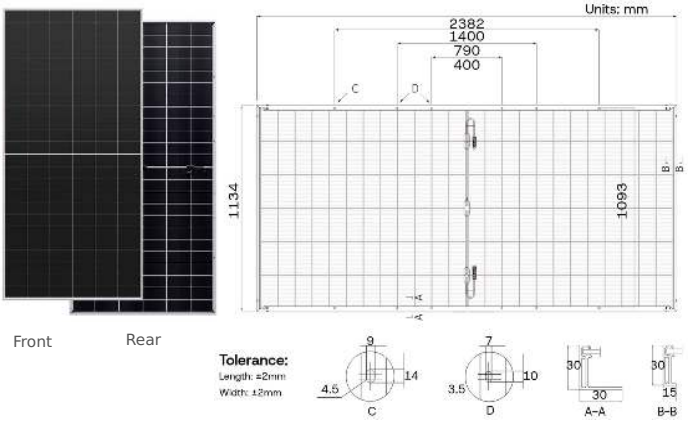
144 half-cut BC cells · Bifacial

| 24.6% | 0~3% | 1% | 0.35% | BC-CELL |
|---|---|---|---|---|
| MAX MODULE EFFICIENCY | POWER TOLERANCE | FIRST-YEAR POWER DEGRADATION | YEAR 2–30 POWER DEGRADATION | LOWER OPERATING TEMPERATURE |

## 30-Year Power Warranty




## Module Views & Dimensions




**Advanced:** N-TaiRay + HPBC 2.0 + 0BB

**Higher Output:** 30W+ Power Gain + Enhanced Shade Tolerance

**Aesthetic:** Zero Front Gridlines + Seamless Integration

**Safer:** Lower Hot-Spot & Micro-Crack

## Mechanical Parameters

| | |
|---|---|
| **Cell Type** | N-type Back Contact (HPBC 2.0) |
| **Cell Orientation** | 144 (6 × 24) |
| **Junction Box** | IP68, three diodes |
| **Output Cable** | 4 mm², +400 / −200 mm (±1400 mm), customizable |
| **Glass** | Dual glass, 2.0 + 2.0 mm semi-tempered |
| **Frame** | Anodized aluminum alloy frame |
| **Weight** | 32.5 kg |
| **Dimensions (L × W × H)** | 2382 × 1134 × 30 mm |
| **Packaging** | 36 pcs / pallet · 288 pcs / 20' GP · 720 pcs / 40' HC |

## Electrical Characteristics

STC: AM1.5, 1000 W/m², 25 °C · NOCT: AM1.5, 800 W/m², 20 °C, 1 m/s · Test uncertainty for $P_{max}$ ±3%

| Module Type | CLM-640M-72 | | CLM-645M-72 | | CLM-650M-72 | | CLM-655M-72 | | CLM-660M-72 | | CLM-665M-72 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Testing Condition** | STC | NOCT | STC | NOCT | STC | NOCT | STC | NOCT | STC | NOCT | STC | NOCT |
| **Maximum Power ($P_{max}$ / W)** | 640 | 487 | 645 | 491 | 650 | 495 | 655 | 499 | 660 | 502 | 665 | 506 |
| **Open Circuit Voltage ($V_{oc}$ / V)** | 54.02 | 51.34 | 54.12 | 51.43 | 54.22 | 51.53 | 54.32 | 51.62 | 54.42 | 51.72 | 54.52 | 51.81 |
| **Short Circuit Current ($I_{sc}$ / A)** | 14.98 | 12.03 | 15.06 | 12.10 | 15.14 | 12.16 | 15.22 | 12.22 | 15.30 | 12.29 | 15.38 | 12.33 |
| **Voltage at Max. Power ($V_{mp}$ / V)** | 44.67 | 42.45 | 44.77 | 42.55 | 44.87 | 42.64 | 44.97 | 42.74 | 45.07 | 42.83 | 45.17 | 42.93 |
| **Current at Max. Power ($I_{mp}$ / A)** | 14.33 | 11.49 | 14.41 | 11.55 | 14.49 | 11.61 | 14.57 | 11.68 | 14.65 | 11.75 | 14.72 | 11.80 |
| **Module Efficiency (%)** | 23.7 | | 23.9 | | 24.1 | | 24.2 | | 24.4 | | 24.6 | |

## Electrical Characteristics with Different Rear-Side Power Gain

Reference bin: CLM-655M-72

| $P_{max}$ / W | $V_{oc}$ / V | $I_{sc}$ / A | $V_{mp}$ / V | $I_{mp}$ / A | $P_{max}$ gain |
|---|---|---|---|---|---|
| **655** | 54.32 | 15.22 | 44.97 | 14.57 | 0% |
| **688** | 54.32 | 15.98 | 44.97 | 15.30 | 5% |
| **721** | 54.32 | 16.74 | 44.97 | 16.03 | 10% |
| **755** | 54.42 | 17.50 | 45.07 | 16.76 | 15% |
| **788** | 54.42 | 18.26 | 45.07 | 17.48 | 20% |
| **821** | 54.42 | 19.03 | 45.07 | 18.21 | 25% |

## Operating Parameters

| | |
|---|---|
| **Operational Temperature** | −40 °C ~ +85 °C |
| **Power Output Tolerance** | 0 ~ +3% |
| **Maximum System Voltage** | DC 1500 V (IEC) |
| **Maximum Series Fuse Rating** | 30 A |
| **Nominal Operating Cell Temperature** | 45 ± 2 °C |
| **Protection Class** | Class II |
| **Fire Rating** | IEC Class C |

## Mechanical Loading

| | |
|---|---|
| **Front Side Maximum Static Loading** | 5400 Pa |
| **Rear Side Maximum Static Loading** | 2400 Pa |
| **Hailstone Test** | 25 mm hailstone at 23 m/s |

## Temperature Ratings (STC)

| | |
|---|---|
| **Temperature Coefficient of $I_{sc}$** | +0.050 %/°C |
| **Temperature Coefficient of $V_{oc}$** | −0.200 %/°C |
| **Temperature Coefficient of $P_{max}$** | −0.260 %/°C |

**OEM / ODM: cell layout · size · voltage · frame colour · private-label · low MOQ**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IEC 61215 DESIGN QUAL. · IEC 61730 SAFETY QUAL. · ISO 9001:2015 QUALITY SYS.

Request a Quote


Values at STC; specifications subject to change without notice — confirm at time of order. Couleenergy (Ningbo Coulee Tech Co., Ltd.) reserves the right of final interpretation.
Warranty: 30-year linear power output, 15-year materials and workmanship.