Smart PV Controller

Active Safety
AI Powered Arcing Protection

Higher Yields
Up to 30% More Energy with Optimizer

Flexible Communication
WLAN, Fast Ethernet, 4G Communication Supported

Efficiency Curve

Efficiency [%]

0.00% 20.00% 40.00% 60.00% 80.00% 100.00%

Load [%]

93% 94% 95% 96% 97% 98% 99%

480V 600V 850V

Circuit Diagram

SUN2000-12/15/17/20KTL-M0/M2

* Only applicable to SUN2000-12/15/17/20KTL-M2 inverter.
## Technical Specification SUN2000-12/15/17/20KTL-M0

### Efficiency

<table>
<thead>
<tr>
<th></th>
<th>SUN2000-12KTL-M0</th>
<th>SUN2000-15KTL-M0</th>
<th>SUN2000-17KTL-M0</th>
<th>SUN2000-20KTL-M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. efficiency</td>
<td>98.50%</td>
<td>98.65%</td>
<td>98.65%</td>
<td>98.65%</td>
</tr>
<tr>
<td>European weighted efficiency</td>
<td>98.00%</td>
<td>98.30%</td>
<td>98.30%</td>
<td>98.30%</td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SUN2000-12KTL-M0</th>
<th>SUN2000-15KTL-M0</th>
<th>SUN2000-17KTL-M0</th>
<th>SUN2000-20KTL-M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. input voltage 1</td>
<td>1,080 V</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Operating voltage range 2</td>
<td>160 V – 950 V</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Start voltage</td>
<td>200 V</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>600 V</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Max. input current per MPPT</td>
<td>22 A</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Max. short-circuit current</td>
<td>30 A</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Number of MPP trackers</td>
<td>2</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SUN2000-12KTL-M0</th>
<th>SUN2000-15KTL-M0</th>
<th>SUN2000-17KTL-M0</th>
<th>SUN2000-20KTL-M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid connection</td>
<td>Three phase</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Rated output power</td>
<td>12,000 W</td>
<td>15,000 W</td>
<td>17,000 W</td>
<td>20,000 W</td>
</tr>
<tr>
<td>Max. apparent power</td>
<td>13,200 VA</td>
<td>16,500 VA</td>
<td>18,700 VA</td>
<td>22,000 VA</td>
</tr>
<tr>
<td>Rated output voltage</td>
<td>220 Vac / 380 Vac, 230 Vac / 400 Vac, 3W + N + PE</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Rated AC grid frequency</td>
<td>50 Hz / 60 Hz</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Max. output current</td>
<td>20 A</td>
<td>25.2 A</td>
<td>28.5 A</td>
<td>33.5 A</td>
</tr>
<tr>
<td>Adjustable power factor</td>
<td>0.8 leading ... 0.8 lagging</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
<tr>
<td>Max. total harmonic distortion</td>
<td>≤ 3 %</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
<td>29,760 Wp</td>
</tr>
</tbody>
</table>

### Features & Protections

- Input-side disconnection device: Yes
- Anti-islanding protection: Yes
- AC over-current protection: Yes
- AC short-circuit protection: Yes
- AC over-voltage protection: Yes
- DC reverse-polarity protection: Yes
- DC surge protection: Type II
- AC surge protection: Yes, compatible TYPE II protection class according to EN/IEC 61643-11
- Residual current monitoring unit: Yes
- Arc fault protection: Yes
- Ripple receiver control: Yes

### General Data

- Operation temperature range: -25 ~ +60 °C (-13 °F ~ 140 °F)
- Relative humidity: 0 % RH ~ 100% RH
- Max. operating altitude: 0 - 4,000 m (13,123 ft.) (Derating above 2000 m)
- Cooling: Natural Convection
- Display: LED indicators; integrated WLAN + FusionSolar APP
- Communication: RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional); 4G / 3G / 2G via Smart Dongle-4G (Optional)
- Weight (with mounting plate): 25 kg
- Dimensions (W x H x D): 525 x 470 x 262 mm (20.7 x 18.5 x 10.3 inch)
- Degree of protection: IP65
- Nighttime Power Consumption: < 5.5 W

### Standard Compliance (more available upon request)

- Safety: EN/IEC 62109-1, EN/IEC 62109-2

---

*1 The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.
*2 Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
## Technical Specification

### SUN2000-12KTL-M2

- **Efficiency**
  - Max. efficiency: 98.50%
  - European weighted efficiency: 98.00%

- **Input**
  - Recommended max. PV power: 18,000 Wp
  - Max. input voltage: 1,080 V
  - Start-up voltage: 200 V
  - Rated input voltage: 600 V
  - Max. input current per MPPT: 22 A
  - Max. short-circuit current: 30 A
  - Number of MPP trackers: 2
  - Max. input number per MPP tracker: 2

- **Output**
  - Grid connection: Three phase
  - Rated output power: 12,000 W
  - Max. apparent power: 13,200 VA
  - Rated output voltage: 220 Vac / 380 Vac
  - Rated AC grid frequency: 50 Hz / 60 Hz
  - Max. output current: 20 A
  - Adjustable power factor: 0.8 leading...
  - Max. total harmonic distortion: ≤ 3 %

- **Features & Protections**
  - Input-side disconnection device: Yes
  - Anti-islanding protection: Yes
  - AC over-current protection: Yes
  - AC short-circuit protection: Yes
  - AC over-voltage protection: Yes
  - DC reverse-polarity protection: Yes
  - DC surge protection: TYPE II
  - AC surge protection: Yes, compatible with TYPE II protection class according to EN/IEC 61643-11
  - Residual current monitoring unit: Yes
  - Arc fault protection: Yes
  - Ripple receiver control: Yes
  - Integrated PID recovery: Yes

- **General Data**
  - Operation temperature range: -25 ~ +60 °C (-13 °F ~ 140 °F)
  - Relative humidity: 0 % RH ~ 100% RH
  - Max. operating altitude: 0 ~ 4,000 m (13,123 ft.) (Derating above 2000 m)
  - Cooling: Natural Convection
  - Display: LED Indicators; Integrated WLAN + FusionSolar App
  - Communication: RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional)
  - 4G / 3G / 2G via Smart Dongle-4G (Optional)
  - Weight (with mounting plate): 25 kg
  - Dimensions (W x H x D) (incl. mounting plate): 525 x 470 x 262 mm (20.7 x 18.5 x 10.3 inch)
  - Degree of protection: IP65
  - Nighttime Power Consumption: < 5.5 W

### SUN2000-15KTL-M2

- **Efficiency**
  - Max. efficiency: 98.65%
  - European weighted efficiency: 98.30%

- **Input**
  - Recommended max. PV power: 22,500 Wp
  - Operating voltage range: 160 V ~ 950 V
  - Rated input voltage: 600 V
  - Max. input current per MPPT: 22 A
  - Max. short-circuit current: 30 A
  - Number of MPP trackers: 2

- **Output**
  - Rated output power: 15,000 W
  - Max. apparent power: 16,500 VA
  - Rated output voltage: 230 Vac / 400 Vac
  - Rated AC grid frequency: 50 Hz / 60 Hz
  - Max. output current: 25.2 A
  - Adjustable power factor: ...

### SUN2000-17KTL-M2

- **Efficiency**
  - Max. efficiency: 98.65%
  - European weighted efficiency: 98.30%

- **Input**
  - Recommended max. PV power: 25,500 Wp
  - Operating voltage range: 160 V ~ 950 V
  - Rated input voltage: 600 V
  - Max. input current per MPPT: 22 A
  - Max. short-circuit current: 30 A
  - Number of MPP trackers: 2

- **Output**
  - Rated output power: 17,000 W
  - Max. apparent power: 18,700 VA
  - Rated output voltage: 230 Vac / 400 Vac, 3W + N + PE
  - Rated AC grid frequency: 50 Hz / 60 Hz
  - Max. output current: 28.5 A
  - Adjustable power factor: ...

### SUN2000-20KTL-M2

- **Efficiency**
  - Max. efficiency: 98.65%
  - European weighted efficiency: 98.30%

- **Input**
  - Recommended max. PV power: 30,000 Wp
  - Operating voltage range: 160 V ~ 950 V
  - Rated input voltage: 600 V
  - Max. input current per MPPT: 22 A
  - Max. short-circuit current: 30 A
  - Number of MPP trackers: 2

- **Output**
  - Rated output power: 20,000 W
  - Max. apparent power: 22,000 VA
  - Rated output voltage: 230 Vac / 400 Vac, 3W + N + PE
  - Rated AC grid frequency: 50 Hz / 60 Hz
  - Max. output current: 33.5 A
  - Adjustable power factor: ...

---

1. Inverter max input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.
2. The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
3. Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
4. SUN2000-12/15/17/20KTL-M2 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly)
5. <10 W when PID recovery function is activated.