The ABB megawatt station is a compact plug-and-play solution designed for large-scale solar power generation. It houses all the electrical equipment that is needed to rapidly connect a photovoltaic (PV) power plant to a medium voltage (MV) electricity grid. All the components within the ABB megawatt station are from ABB’s product portfolio.

**Turnkey-solution for PV power plants**
The ABB megawatt station design capitalizes on ABB’s long experience in developing and manufacturing secondary substations for utilities and major endusers worldwide in conventional power transmission installations.

A station houses two outdoor 1500 V$_{dc}$ ABB central inverters, an optimized ABB dry type- or oil immersed transformer, MV switchgear, a monitoring system and DC connections from solar array. The ABB megawatt station is used to connect a PV power plant to a MV electricity grid easily and rapidly. To meet the PV power plant’s demanded capacity, several ABB megawatt station can be used.

**Compact design eases transportation**
The station has standard, 40-feet High Cube shipping container dimensions. The small inverter footprint makes the station compact and easy to lift via a standard crane. The total package weighs less than 30 metric tons. The standardized shipping dimensions ensures cost-effective and safe transportability to the site even overseas. The station’s optimized air circulation and filtering system together with thermal insulation for dry type transformer or open air design for oil immersed transformer enable installations to various ambient conditions, from harsh desert temperatures to cold and humid environments. The ABB megawatt station is designed for at least 25 years of operation.

**Highlights**
- Proven technology and reliable components
- Compact and robust design
- Outstanding endurance for outdoor use
- High DC input voltage up to 1500 V$_{dc}$
- High total efficiency
- Extensive DC and AC side protection
- Self-contained cooling system for inverters
- Modular and serviceable system
- Embedded auxiliary power distribution system
- Extendable manufacturing footprint with fast deliveries
- Global life cycle services and support
As a major global transformer manufacturer, ABB offers a wide range of transformers. Alternate power transformers are available to meet customer requirements. All ABB’s transformers are manufactured in accordance with the most demanding industry and international standards.

Switchgear
ABB offers a complete range of medium voltage switchgear for secondary distribution, including air-insulated and gas-insulated switchgear.

The ABB megawatt station is equipped, as standard, with the widely proven ABB SafeRing, SF₆-insulated switchgear.

A sealed steel tank with constant atmospheric conditions ensures a high level of reliability as well as personnel safety. The virtually maintenance-free system comes in a compact and flexible design that allows for a versatile switchgear configuration. As an option ABB’s gas-insulated SafePlus and air insulated Unisec switchgear are also available.

### Technical data and types

<table>
<thead>
<tr>
<th>Type designation</th>
<th>-3636kVA-l-xx-zzz</th>
<th>-3818kVA-J-xx-zzz</th>
<th>-4000kVA-K-xx-zzz</th>
<th>-4182kVA-L-xx-zzz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rating</td>
<td>4000 kVA</td>
<td>4200 kVA</td>
<td>4400 kVA</td>
<td>4600 kVA</td>
</tr>
</tbody>
</table>

**Input (DC)**
- Maximum input power ($P_{PV,\text{max}}$) 2x2909 kWp 2x3056 kWp 2x3200 kWp 2x3346 kWp
- DC voltage range, mpp ($U_{DC,\text{mpp}}$) @ 35 °C (122°F) 850…1500 V 893…1500 V 935…1500 V 978…1500 V
- Maximum operational DC voltage ($U_{DC,\text{max}}$) 1500 V
- Number of protected DC inputs (parallel) 2x8 (up to 24 as option)
- Number of mppt trackers 2

**Output (AC)**
- Nominal AC output power ($S_{\text{AC,nom}}$) @ 50 °C (122°F) 3636 kVA 3818 kVA 4000 kVA 4182 kVA
- Maximum AC output power ($S_{\text{AC,max}}$) @ 35 °C (122°F) 4000 kVA 4200 kVA 4400 kVA 4600 kVA
- Medium voltage range ($U_{N,\text{AC}}$) 12 kV to 36 kV
- Output frequency 50/60 Hz
- Harmonic distortion, current (< 3%)
- Power factor compensation (cosϕ) Yes
- Transformer type ABB Vacuum cast coil dry type (AF), or ABB Oil immersed type (ONAN)
- Medium voltage switchgear type ABB SafeRing, SF₆-insulated, DeV, CV or CCV
- Enclosure Painted steel outdoor enclosure, IP54, C4 corrosion protection

**Efficiency**
- Maximum (inverter only) 98.8%
- Euro-eta (inverter only) 98.6%

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1) Where xx-medium voltage level, zzz-transformer type, oil or dry
2) Nominal voltage 12 kV to 36 kV, from 6 kV on as option
3) At nominal power
4) Other ABB switchgear types available as an option
ABB megawatt station design and grid connection

Technical data and types

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**Power consumption**

- Own consumption in operation: ≤ 5500 W / ≤ 7700 W \(^5\)
- Standby operation consumption: ≤ 800 W
- Auxiliary voltage for customer use: 3 ~ 400 V/50 Hz, up to 40 kVA

**Dimensions and weight**

- Width/Height/Depth, mm: 12190 mm/2900 mm/2440 mm (40´ HC container dimensions)
- Weight approx.: < 30 t

**Environmental limits**

- Degree of protection: Inverter IP56/IP66, UL Type 3R, IP44/54 RMU and dry type transformer housing
- Ambient temperature range (nominal ratings) \(^6\): -20 °C to +50 °C
- Maximum altitude (above sea level) \(^7\): 1000 m
- Relative humidity, non condensing: 5% to 95%

**User interface and communications**

- Local user interface: Inverter’s control panel and PC interface through ABB Drive Studio
- Fieldbus connectivity: Modbus RTU, -TCP, Ethernet IP, Profinet

**Product compliance**

- Conformity: IEC 60364, IEC 61936-1, IEC 60502-1
- Grid support: Reactive power compensation \(^8\), Power reduction, LVRT, HVRT, FqRT

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\(^5\) ≤ 5500 W with oil type transformer, ≤ 7700 W with dry type transformer

\(^6\) Extended range upon request

\(^7\) Higher altitude upon request

\(^8\) Also during the night
Accessories
- Solar array junction boxes with string monitoring
- Remote monitoring solutions
- Warranty extensions
- Solar inverter care contracts

Options
- MV AC output voltages (6 to 36 kV)
- Different MV switchgear configurations
- I/O extensions
- DC grounding, positive
- Floating DC
- Fieldbus and Ethernet connections
- Auxiliary power supply from main power connections
- CSM enclosure corrosion protection

Support and service
ABB supports its customers with a dedicated service network in more than 60 countries and provides a complete range of life cycle services from installation and commissioning to preventative maintenance, spare parts, repairs and recycling.