Central inverter
PVS980-58-US

The new high power FIMER central inverter raises the performance, cost efficiency and ease of installation to new levels. The inverters are aimed at system integrators and end users who require high-performance solar inverters for large photovoltaic (PV) power plants and are optimized for multi-megawatt power plants.

From 4348 to 5000 kVA
Maximum energy revenues

FIMER central inverters have a high total efficiency. Precise, optimized system control and maximum power point tracking (MPPT) combined with the unit’s highly efficient power converter design deliver the maximum energy from the PV modules to the power distribution network. For end users, this generates the highest possible revenues from the energy sales.

Patented cooling system
PVS980-58 inverter utilizes patented self-contained cooling system in power module cooling. This innovative, low-maintenance cooling solution is also used in other industrial applications and is designed for demanding environments. The cooling system needs no separate commission and it ensures outstanding endurance.

Compact and modular design
PVS980-58 inverters are designed for fast and easy installation. The industrial design and modular platform provide a wide range of options, such as remote monitoring, fieldbus connection and modular and flexible DC input connections. The integrated DC cabinet saves space and costs as the solar array junction boxes can be connected directly to the fused busbars in the DC cabinet. PVS980-58 inverters are customized for the needs of end users and will be available with short delivery times.

Versatile design for large-scale PV plants to minimize system costs
FIMER’s PVS980-58 central inverter enables system integrators to design PV power plants that use the optimum combination of inverters with different power ratings. Equipped with extensive electrical and mechanical protection, the inverters are engineered to provide a long and reliable service life of at least 25 years.

Advanced grid support features
The PVS980-58 software includes all the latest grid support and monitoring features, including active power limitation, fault ride through (FRT) with current feed-in and reactive power control. Active and reactive power output can be controlled by an external control system or automatically by the inverter.

All grid support functions are parameterized, allowing easy adjusting for local utility requirements. FIMER central inverters are also able to support grid stability at night by providing reactive power with the DC input disconnected.
## Technical data and types

<table>
<thead>
<tr>
<th>Product</th>
<th>Type designation, PVS980-58</th>
<th>PVS980-58 4.3 MVA</th>
<th>PVS980-58 4.6 MVA</th>
<th>PVS980-58 4.8 MVA</th>
<th>PVS980-58 5.0 MVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input (DC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum recommended input power (P_{riv,max})</td>
<td>8696 kWp</td>
<td>9130 kWp</td>
<td>9564 kWp</td>
<td>10000 kWp</td>
<td></td>
</tr>
<tr>
<td>Maximum DC short circuit current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 kA</td>
</tr>
<tr>
<td>Maximum operational DC current</td>
<td></td>
<td></td>
<td></td>
<td>5700 A</td>
<td></td>
</tr>
<tr>
<td>Maximum operational DC voltage (U_{max (dc)})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1500 V</td>
</tr>
<tr>
<td>DC voltage range for maximum power (U_{mpp})</td>
<td>850 to 1350 V</td>
<td>893 to 1350 V</td>
<td>935 to 1350 V</td>
<td>978 to 1350 V</td>
<td></td>
</tr>
<tr>
<td>DC voltage range for maximum power (U_{mpp}) 25 °C</td>
<td>850 to 1250 V</td>
<td>893 to 1250 V</td>
<td>935 to 1250 V</td>
<td>978 to 1250 V</td>
<td></td>
</tr>
<tr>
<td>DC voltage range for maximum power (U_{mpp}) 50 °C</td>
<td>850 to 1100 V</td>
<td>893 to 1100 V</td>
<td>935 to 1100 V</td>
<td>978 to 1100 V</td>
<td></td>
</tr>
<tr>
<td>Number of MPPT trackers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Number of protected DC inputs</td>
<td></td>
<td></td>
<td></td>
<td>20-36 (+/-)</td>
<td></td>
</tr>
<tr>
<td>Output (AC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4184 A</td>
</tr>
<tr>
<td>Power</td>
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<td></td>
<td></td>
<td></td>
<td>4229 kVA</td>
</tr>
<tr>
<td>AC current</td>
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<td></td>
<td></td>
<td></td>
<td>4070 A</td>
</tr>
<tr>
<td>Power</td>
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<td></td>
<td></td>
<td></td>
<td>3845 kVA</td>
</tr>
<tr>
<td>AC current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3700 A</td>
</tr>
<tr>
<td>Nominal output voltage (U_{ac})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600 V</td>
</tr>
<tr>
<td>Output frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Harmonic distortion, current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt; 3%</td>
</tr>
<tr>
<td>Maximum AC short circuit current from network</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>80 kA (1 s RMS)</td>
</tr>
<tr>
<td>Distribution network type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TN and IT</td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.8%</td>
</tr>
<tr>
<td>Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.6%</td>
</tr>
<tr>
<td>Euro-eta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEC efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.5%</td>
</tr>
<tr>
<td>Power consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum own consumption in operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5000 W</td>
</tr>
<tr>
<td>Maximum standby operation consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>460 W</td>
</tr>
<tr>
<td>Auxiliary voltage type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>external (B)</td>
</tr>
</tbody>
</table>

1) DC/AC ratio close to 2.0 might shorten maintenance intervals
2) Throughout the temperature range
3) Standard 24 DC inputs with negative grounding, fuses on positive pole only
4) +/- 10%, consult FIMER for detailed information
5) +/- 10 Hz
6) At nominal power
7) Inverter side must be IT type
8) Without auxiliary power consumption at min U_{ac}
9) Rounded according to CEC rules
10) Internal available as an option
Technical data and types

**Dimensions and weight**

<table>
<thead>
<tr>
<th>Product Type designation, PVS980-58</th>
<th>PVS980-58 4.3 MVA -4348kVA-I</th>
<th>PVS980-58 4.6 MVA -4565kVA-J</th>
<th>PVS980-58 4.8 MVA -4782kVA-K</th>
<th>PVS980-58 5.0 MVA -5000kVA-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width/Height/Depth, mm (W/H/D)</td>
<td>5600/2200/1600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight appr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental limits</td>
<td>IP65 /Type 3R, sand test certified.</td>
<td>-20 °C to +50 °C</td>
<td>+60 °C</td>
<td>4 ... 100%</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>-20 °C to +50 °C</td>
<td>+60 °C</td>
<td>4 ... 100%</td>
<td>4000m</td>
</tr>
<tr>
<td>Ambient temp. range</td>
<td>-20 °C to +50 °C</td>
<td>+60 °C</td>
<td>4 ... 100%</td>
<td>4000m</td>
</tr>
<tr>
<td>Maximum ambient temperature</td>
<td>+60 °C</td>
<td>4 ... 100%</td>
<td>4000m</td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>4 ... 100%</td>
<td>4000m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum altitude (above sea level)</td>
<td>4000m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum noise level</td>
<td>84 dBA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Environmental limits**

- Ambient temp. range: -20 °C to +50 °C
- Maximum ambient temperature: +60 °C
- Relative humidity: 4 ... 100%
- Maximum altitude (above sea level): 4000m
- Maximum noise level: 84 dBA

**Protection**

- Ground fault monitoring: Yes
- Grid monitoring: Yes
- Anti-islanding: Yes
- DC reverse polarity: Yes
- AC and DC short circuit and over current: Yes
- AC and DC over voltage and temperature: Yes

**User interface and communications**

- Local user interface: Local control panel
- Analog inputs/outputs: 2/1 as standard, extendable as engineered option
- Digital inputs/relay outputs: 7/1 as standard, extendable as engineered option
- Fieldbus connectivity: Modbus, Profinet, Ethernet IP

**Product compliance**

- CE Declaration of Conformity, IEC/UL62109, UL1741, CSA, IEC62920, FCC
- IEC60068-2-X, UL1998, IEEE1547, VDE4110/4120, RCM, SAGC, CEI 0-16
- Reactive power compensation, Power reduction, LVRT, HVRT, FqRT

**Notes**

- -40 °C as option
- Power limiting after 50 °C
- Possible power limiting above 1000 m, depending on temperature
- Nominal 2000m, up to 4000 m optionally
- At partial power typically < 75 dBA
- More communication options as engineered option

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PVS980-58, 4.3 – 5MVA
Central inverter
PVS980-58-US from 4348 to 5000 kVA

High total performance
• High efficiency
• Low auxiliary power consumption
• Innovative controlled cooling
• Efficient maximum power point tracking
• Long and reliable service life of at least 25 years

Outstanding endurance for outdoor use
• Water- and dustproof outdoor enclosure
• Designed to withstand the toughest environments
• Long and reliable service life following the FIMER life cycle model

Modular industrial design
• Compact and easy-to-maintain product design
• Fast and easy installation
• Integrated and flexible DC input section

Life cycle service and support
• FIMER’s extensive global service network
• Extended warranties
• Service contracts
• Technical support throughout the service life

Patented cooling system
• Self-contained, thermosiphon cooled power modules
• Liquid-cooled inverter power ratings with the simplicity of air cooling
• No fillable liquids, pumps, valves, inhibitors or leaks
• Low maintenance

Versatile design for largescale PV plants
• Fast AC connection with busbars, no AC cable pulling
• Integrated DC connection with variable number of inputs
• Wide standard option palette for tailoring

Minimizes system costs
• Very high output power and small footprint allows cost efficient power block designs
• 1500 V<sub>dc</sub> system voltage
• Wide ranged and highly efficient MPPT algorithm
• Integrated protection to minimize external components
• Fast and easy installation and commissioning

Wide communication options
• Complete range of industrial data communication options for SCADA connections
• Ethernet/Internet Protocol
• Remote monitoring

Comprehensive simulation models
• PSS/E
• PSCAD
• DigSilent
Data communication principle for PVS980-58-US central inverter

Options
- Integrated and flexible DC input extension
- Heavy duty (Type 1) surge protection
- Various internal auxiliary power supply options up to 10kVA for customer use
- Floating DC
- Fieldbus and Ethernet connections
- Current measurement to each DC input
- High altitude version
- Low temperature version
- Warranty extensions
- Solar inverter care contracts

Related products
- Integrated products, pad mounted- or compact skid solutions
- String monitoring junction boxes
- Remote monitoring solutions

Support and service
FIMER supports its customers with a global service network and provides a complete range of life cycle services from installation and commissioning to preventative maintenance, spare parts, repairs and recycling.