### Reliable

- Meets the requirements of international directives for grid management service
- PLC-based, modular system with proven industrial grade components
- Highest data and power plant protection with uninterruptible electricity supply

### Highly functional

- Sophisticated algorithm to regulate voltage and active/reactive power
- Feed-in management and offset of quick changes in power due to weather conditions
- Automatic active power adjustment in case of frequency deviations

### Flexible

- Remote control and updates via VPN tunnel
- Customer-specific devices with modular I/O expandability
- Can be expanded with new features and communication protocols

### Easy to Use

- Robust, factory tested components mitigate project risks
- Simple communication connection, configuration and operation via user interface
- Integrated touch panel for operation on-site (optional)

# POWER PLANT CONTROLLER

## Flexible park control and feed-in management for PV power plants

The Power Plant Controller offers intelligent and flexible solutions for the park control of all PV power plants in the megawatt range. It is suitable for PV power plants with central inverters as well as for those with decentralized string inverters. Valuable predictions on the behavior of the Power Plant Controller and the design of the plant can be conducted by simulation tools before commissioning. A high-performance PLC enables fast adaptation of reactive and active power in accordance with the requirements of the electric utility company for the stabilization of the grid. With expandability for new communication protocols, standards for individual connection and a modular design, the Power Plant Controller is well suited to meet the future requirements of PV power plants.

| Technical Data | Power Plant Controller |
|---|---|
| **Control functions** | |
| Closed-loop control | Controls voltage, active power, reactive power and power factor at the feed-in point |
| Output limitation | Curtails instantaneous power to desired value |
| Power ramp function | Offsets power fluctuations caused by events such as rapid increases in the intensity of solar irradiation |
| Automatic active power adjustment in case of frequency deviations | Reduces instantaneous power if frequency rises |
| Characteristic curve control | Characteristic curves for e.g., Q(U), cosφ(P), P(f) |
| Other | Fast stop / start-up of system |
| **Communication** | |
| System communication with grid operator, SCADA and inverters | 2 separate Ethernet ports with integrated switches for external communication; 10 BASE-T and 100 BASE-T(X) |
| Communication inside switch cabinet | 1 additional Ethernet port for communication to touch display, I/O expansion, service port, etc. |
| Communication protocols | Modbus / TCP, Modbus / UDP, FTP server |
| Alerts | Sending plant and network alarm messages to host and supervisory systems |
| **Visualization / User Interface / Data Recording** | |
| Visualization and configuration interface | Via onboard 10" touch display (optional) or remotely with a web browser |
| Displaying of data | Visualization of measured values (e.g., V, P, Q, power factor) |
| Diagnostics | Fault tracking and displaying of plant status, failures, errors, warnings via user interface |
| Event log | Logbook for logging status changes and events |
| **CPU / I/O / Memory** | |
| CPU | High-performance PLC, programming according to IEC61131-3 |
| Analog inputs | 4 mA to 20 mA, –10 V to +10 V |
| Analog outputs | 4 mA to 20 mA |
| Digital inputs | 24 V DC |
| Digital outputs (relay) | 250 V AC or 30 V DC, 5 A |
| Remote I/O | Via Modbus / TCP |
| Application update | Via 2 x USB 2.0 high-speed ports / type A |
| Clock | Real time clock (RTC) with maintenance-free buffering |
| Status and diagnostics indicators | Via LC display and LEDs (onboard PLC) |
| Watchdog function | Restart following fault condition |
| **Switch Cabinet for Power Plant Controller** | |
| Installed devices | Power Plant Controller PLC, switches, uninterruptible and redundant electricity supply, fuses, terminal area |
| 10" TFT touch display (for indoors) | ○ |
| Managed switches | ○ |
| Media converter | ○ |
| I/O expansion (up to 18 digital, 12 analog inputs and 16 digital, 7 analog outputs) | ○ |
| Dimensions (W / H / D) | 720 / 1125 / 325 mm |
| Space required for assembly (W / H / D) | 2,000 / 2,100 / 1,800 mm |
| Mounting type | Wall mounting |
| Weight | 60 kg |
| Material | Aluminium, powder-coated |
| **Electricity Supply** | |
| Supply voltage (AC redundant /DC redundant) | 100 to 240 V AC, 50/60 Hz / 36 to 60 V DC |
| Typ. current consumption for AC power supply unit | 2 x 1.2 A (@ 120 V AC) / 2 x 0.6 A (@ 230 V AC) |
| Typ. current consumption for DC power supply unit | 2 x 2.75 A (@ 48 V DC) |
| Back-up current-limiting fuse | 16 A |
| **Ambient conditions during operation** | |
| Ambient temperature | -20 °C to + 50 °C (temperature derating at altitude above mean sea level > 2,000 m) |
| Relative humidity | 10% to 95% non-condensing |
| Degree of protection | IP54, can also be installed outdoors without display |
| Overvoltage category | 2 |
| Maximum operating altitude above MSL | 2,000 m, without I/O expansion: 4,000 m |
| **Compatibility** | |
| With inverters | Sunny Central CP / CP-JP / CP-US / HE-20, Sunny Central 1850-US / 2200-US / 2200 / 2500-EV (controlled via SC-COM), Sunny Tripower (controlled via SMA Cluster Controller), Sunny Tripower 60 (controlled via SMA Inverter Manager), others upon request |
| With network analyzers via Modbus TCP | Ardetem TRM4, Janitza UMG 604/605, Schneider Electric ION 8600 / ION 7550 / ION 7560, Schweitzer Engineering Laboratories SEL-735 |
| **Other** | |
| Certificates and approvals | CE, EN 60950-1, FCC, NRCS (SANS IEC 60950), planned: UL/CSA (UL 60950) |
| Accessories: USB flash drive 4 GB or 8 GB, highly reliable industrial quality | ○ |
| Warranty | 5 years |
| | |
| ● Standard features ○ Optional features – Not available | |
| Type designation | PPC-10 |



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