

## Product Specifications

# Microgrid Controller

Hardware agnostic software that works with existing assets to improve equipment efficiency, reducing or eliminating the need for expensive infrastructure upgrades.

The PXiSE Microgrid Controller helps utilities, campuses, and communities manage and coordinate localized DERs and loads by independently balancing real and reactive power, and efficiently dispatching resources for resiliency, power quality, and economic benefit.

### Advantages

PXiSE's Microgrid Controller offers several advantages

- Power assurance and control at the POI
- Stable electric service in both grid-connected and islanded modes
- Flexible expansion from standard to advanced operations
- Behind-the-meter energy savings and wholesale export optimization



See our Microgrid Controller fact sheet or visit [pxise.com/mgc](https://pxise.com/mgc) for details.

### Controllable components

Component	Quantity		Communication
	Standard MGC	Advanced MGC	
Generator	Up to 4	5 or more	Modbus IP / Serial
Battery storage	Up to 2	3 or more	Modbus IP
Solar PV system	Up to 2	3 or more	Modbus IP / Serial
Wind system	N/A	1 or more	Modbus IP
Load	N/A	1 or more	Modbus / Analog

### Functional specifications

#### Optimization

Optional enhancements to provide additional cost savings

- Energy forecasting – 24 hours ahead with 5-minute refresh intervals
- Economics
  - Energy import and export based on the most profitable use of each DER
  - Improved operating efficiency of generators, energy storage, solar production and the system as a whole
- Reliability
  - Volt/var control to maintain power quality
  - Maximize run time of critical operations when islanded

## Included microgrid controls

Standard	Advanced
Direct control of inverters and generators with enforced, closed-loop feedback @ POI	Autonomous islanding and reconnection
Independent real and reactive power control of resources	Black start capability
Power factor and power schedule control @ POI	Fast load shedding and intermittent resource curtailment
Battery SoC management	Ramp rate control and frequency support @ POI
Data measurement and control at up to 10Hz or 10x/second for inverter-based resources	Data measurement and control at up to 60Hz or 60x/second for inverter-based resources

### Communication protocols and data interfaces

- ISO communications and control interface
  - Power and ancillary service dispatch, and curtailment order
- Support for all major SCADA protocols including Modbus, DNP3, OPC UA, and IEC61850
- Support for real-time Phasor Measurement Units using C37.118

### Alarms

- Alarm functions using ISA standard
- Alert via email and SMS (text) notification

## Software specifications

### Installed programs

- PXiSE Microgrid Controller
- OSIsoft PI System OEM license

### Cybersecurity

- Compliant with NERC requirements according to user security standards
  - Isolated LAN with VPN access
  - Microsoft operating system user security
  - Role-based security level control

### Data management

- Operational data storage for 13 months
  - Microgrid system data (PI Data Archive)
  - Asset data model for organizing and contextualizing data (PI Asset Framework)
- User-enabled analytics and reporting

### HMI

- Standard web-based human-machine interface templates (PI Vision)
  - Operating diagrams, device status, and alarm
- User-customizable displays

## Hardware specifications

### Computing hardware

- Industrial computer such SEL 3355 or compatible device from Moxa or Advantech
  - Dual to quad-core CPU with 512GB data storage
- Or server class computer running virtual machines (VMs)

### Protective and control hardware

- Protective relay with PMU @ POI (SEL 351A or equivalent)
- Protective relay with PMU at Battery PCS (Advanced application)