



## Pixii Controller

The Pixii Controller unifies control, communication, and intelligence across the PowerNode family.



Ensures secure, efficient operation of every component - from local management to full multi-site energy optimization.



Engineered for reliability in any environment – from  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .

## Intelligent control at the core of every PowerNode

The Pixii Controller is the central control unit for the PowerNode family. It manages, monitors, and coordinates all components in the system – ensuring secure and efficient operation both on-site and in connection with external equipment.

### Control and EMS ready

The Pixii Controller provides advanced local control, monitoring, and data collection for your PowerNode system. For customers who require full energy management, forecasting, and multi-site coordination, the same hardware can be enabled with Pixii's Energy Architect EMS software.

### Built for demanding environments

Designed for industrial use, the Pixii Controller delivers reliable performance from  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  and meets IEC 60255 and UL 6200 standards. Built-in security features, such as secure boot and signed software updates, ensure safe and stable operation throughout the product lifecycle.

### Seamless communication

Supporting standard industry protocols including Modbus TCP/RTU, OPC UA, CAN bus, and EtherCAT, the Pixii Controller connects effortlessly with sensors, meters, inverters, and third-party management systems. Configuration and monitoring can be performed through a browser-based interface or local display.

## Highlights

- Quad-core 64-bit ARM processor
- 2 GB RAM and 32 GB flash storage
- Modular input/output expansion for digital and analogue signals
- Integrated managed Ethernet switch
- 3 CAN ports
- Secure Linux-based OS with IPv4/IPv6
- WebConfig for easy local setup
- Operating range:  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- CE, UKCA, UL/cUL & DNV certified



*When integrated with Pixii Energy Architect, the Pixii Controller hardware becomes part of a larger, cloud-enabled energy management system (EMS)*

# Pixii Controller

## Electrical specifications

**Power supply:**  
12 or 24Vdc,  
Operating range 6.5 - 36Vdc;  
Start current limiter 24 V: ≥4A / 12 V: ≥8A.  
Reverse-polarity protected  
Load-dump protected (ISO 16750-2 test A)

**Drop-out immunity:**  
0V for 50ms (from >6.5V) at 15W

**Power consumption:**  
15W typical / 28W max.  
Battery voltage measurement accuracy:  
±0.8V (8 - 32V), ±0.5V @20°C

**I/O on controller:**  
8 digital bi-directional channels;  
4 analogue bi-directional channels (config. I/O).  
Digital input 0 - 24Vdc (4V threshold).  
Analogue inputs: voltage 0 -10V (16-bit, 0.5% FS),  
current 0–20 mA (16-bit, 0.6% FS).

## Communication and connectivity

**Ethernet:** 1× ETH0 (100/100BASE-T) + 3-port managed switch (10/100BASE-T).

**Serial/CAN:** 2× RS-485 (half-duplex),  
1× RS-232 (COM1), 3× CAN (ISO 11898,  
50–1000 kbit/s, selectable termination).

**USB/Display:** USB 3.0 host (Type-A), power delivery up to 4.5 W; DisplayPort 1.3 (1080p) (base-mounted use)

**Network features (WebConfig):** on-device web configuration, multi-user access, VLAN config for built-in 4-port switch, IPv4/IPv6, NTP (server & client), DHCP client, mDNS discovery, backup/restore.

**Application protocols:** OPC UA (server & client), Modbus TCP/RTU (client & server), PROFINET v2.3 RT (controller & device), EtherCAT master; CANopen, J1939.

**Interfaces:** Browser-based WebConfig for setup/monitoring (as above).

## Physical specifications

Dimensions, front-mounted (HxWxD)(mm) 286x173x88

Dimensions, panel cutout (HxWxD)(mm) 220x160

Dimensions, base-mounted (HxWxD)(mm) 248x179x96

Dimensions, mounting holes (HxWxD)(mm) 231.1x143.1

Net. weight front-mounted 1233g

Net. weight base-mounted 942g

Ingress protection (IP) rating, when mounted with gasket IP65

Operating temperature range -30°C - +70°C

## CPU, memory and OS

CPU 1.6 GHz quad-core ARMv8 64-bit (ECC cache)

Memory 2 GB LPDDR4

Storage 32 GB 3D TLC NAND (pseudo-SLC), ~7 GB user

Persistent: 128 kB via CODESYS (256 kB FRAM installed)

Cooling: Passive

OS Linux BSPv5 with PREEMPT RT patch; dual-image fail-safe start; secure boot; error-correcting FS.

## Cybersecurity and approvals

Cybersecurity: Conforming to IACS UR E27.

Approvals: CE, UKCA, DNV, UL/cUL listed to UL/ULC 6200:2019