



ENERGY MANAGEMENT

EMS

Smarter energy. Lower bills. Real control.

ARQ CONTROLS · INDUSTRIAL ENERGY CONTROL

MODBUS

The challenge

Electricity prices shift hourly. PV, batteries, grid, and generators have to cooperate without tripping export limits or demand charges. Manual control is complex and time-consuming.

The solution

Peak / Valley / Flat modes

Runs up to 10 daily time slots for automated switching between modes.

Automated control

Automates PV, battery, grid, and generator control to cut peak costs and stay compliant.

Generator integration

Optional generator integration (+Gen). Supports dozens of inverter and meter brands.

Zero-export & peak shaving

Zero-export and 5-minute dashboard refresh built in.

Weekly reports

Weekly and monthly reports delivered automatically.

Wide compatibility

Supports dozens of inverter and meter brands across RS485 and Modbus TCP.

How it works

- You define the time slots. The EMS selects the right mode automatically.
- It always respects the minimum grid import and export limits you set.
- It keeps batteries within SOC limits and ramps PV smoothly.

Three smart modes

Peak

Use battery first, shave grid peaks, no grid charging.

Valley

Charge battery from cheap grid plus PV. Battery export disabled.

Flat

Battery only for peak shaving. PV covers loads, no grid charging.

Dashboards & reports

- Live dashboards every 5 minutes: PV, load, battery, grid, generator.
- Weekly or monthly emailed PDF / DOCX summaries.
- Custom interactive analytics available (Pro / Enterprise or add-on).

Packages

Three tiers scale from a single controller to a bespoke fleet deployment.

PACKAGE	DEVICES INCLUDED	DASHBOARDS	REPORTS	+GEN ADD-ON	DATA RETENTION	PRICING
Standard	≤ 2 RS485 & ≤ 1 Modbus TCP	5-min refresh	Weekly / Monthly	Optional	12 months	Via ARQ Controls direct
Professional	≤ 6 RS485 & ≤ 5 Modbus TCP	5-min refresh	Weekly / Monthly	Optional	Indefinite (purged 90 days post-cancel)	Via ARQ Controls direct
Enterprise	> 6 RS485 and / or > 5 Modbus TCP	5-min (or bespoke)	Weekly / Monthly (or bespoke)	Optional	Bespoke	By quote

Pricing available via ARQ Controls direct or enterprise quote. Contact info@arqcontrols.com for current package pricing and configuration details.

Supported hardware & protocols

RS485 and Modbus TCP across a wide range of inverters, meters, and controllers (Sungrow, Fronius, SMA, Carlo Gavazzi, Deep Sea, ComAp, and more).

Optional protocol packs: **DNP3**, **IEC 60870-5-104**, **BACnet**, **MQTT bridge**.

Controller hardware

CPU	Intel Celeron / Pentium (J1800 to N4100 class)	Power	DC 12 V 3 A / 36 W (AC to DC, 100–240 V)
Storage	mSATA SSD + 2.5" SATA HDD / SSD	Dimension	136 × 128 × 39 mm
Memory	SODIMM DDR3L, up to 8 GB	Chassis	Aluminum alloy, fanless
Ethernet	2 × 10 / 100 / 1000 Mbps, WOL / PXE	Operating	–20°C to +75°C, 5–95% RH
Display	1 × HDMI, 1 × VGA, dual-screen	Certifications	CCC, CE, ROHS, SGS
Expansion	1 × half-height Mini PCIe	Humidity	5–95% RH, non-condensing

Peak mode logic

- Battery covers loads minus the minimum grid import.
- Two SOC cut-offs (for example 50% general, 20% for shaving only).
- Grid does not charge the battery.
- PV charges the battery first. It exports only after the PV Charge Stop SOC, if enabled.
- If export is disabled, PV is limited to load plus the minimum grid import.

Valley & Flat modes

- Valley mode: grid and PV may charge the battery. No battery export. Still shaves peaks above the grid limit. Minimum grid import is honored.
- Flat mode: battery charges only from PV excess and discharges only for shaving. Minimum grid import is maintained.

Generator logic

- Start / stop on SOC, demand, or manual override, even if the grid is present.
 - Keep the generator within its Min / Max power window by charging or discharging the battery.
 - PV is allowed alongside the generator, if enabled.
 - Fallback when there is no generator feedback. Soft ramp to avoid overload.
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FOR FURTHER ENQUIRIES

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