

INTELLIGENT CONTROL FOR EFFICIENT DATA CENTERS

Turning gray space into competitive advantage.



BUILDING GREENER DATA CENTERS

LET'S CHANGE THE FUTURE TOGETHER

Our planet is at a critical turning point. No single person, company, or country can solve the challenge alone. Building a sustainable future will require collective action.

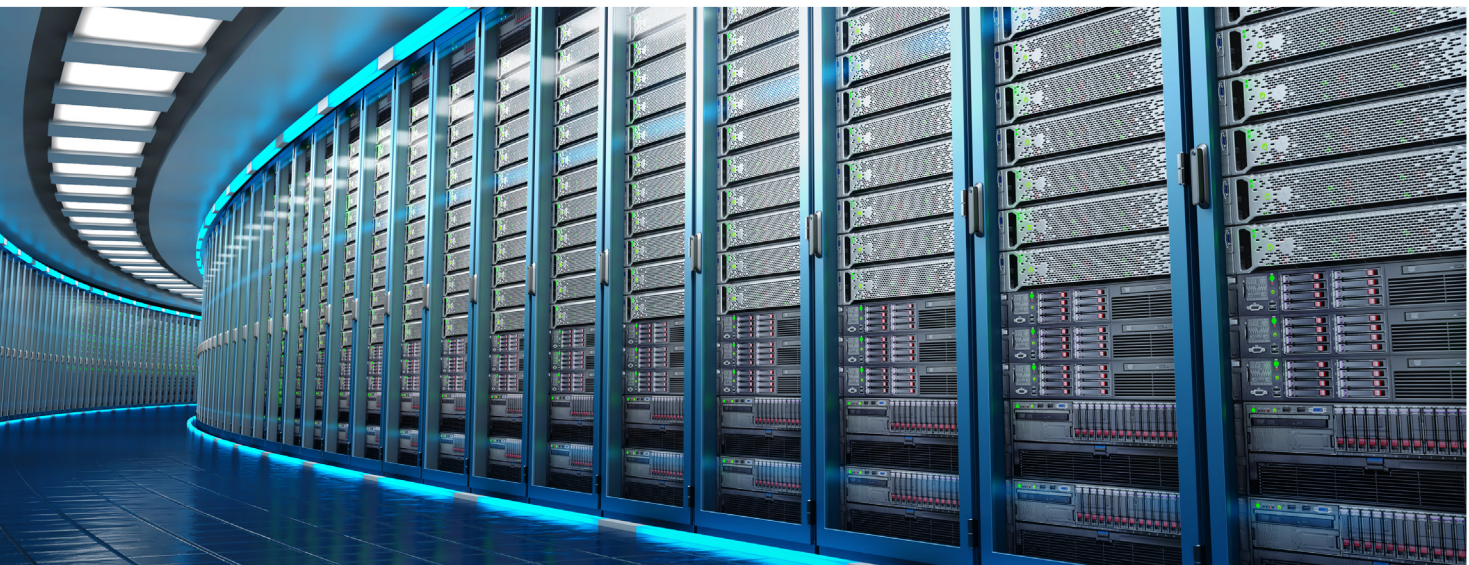
For us, that means advancing the infrastructure powering the AI era, where data centers are scaling rapidly and energy demands are intensifying. By enabling next-generation liquid cooling and intelligent automation, we help reduce energy consumption, optimize performance, and support more efficient AI operations.

We believe the path forward lies in harnessing innovation by accelerating digitalization, adopting advanced cooling technologies, and driving aggressive decarbonization.

Join us in building greener, more sustainable data centers.

By 2030, driven largely
by AI, U.S. data center
energy demand is
expected to grow by
up to 130%.

— IEA



POWER AND COOLING INFRASTRUCTURE HAVE NEVER MATTERED MORE

EVERY KILOWATT COUNTS IN THE AI ERA

Our digital world runs on data centers, which are now recognized as critical infrastructure. In the age of AI, their importance and impact are accelerating dramatically. AI workloads are driving unprecedented demand for compute power, and with it, a surge in energy consumption and regulatory scrutiny.

It's in everybody's best interest to adopt solutions that reduce energy use while enabling greater transparency and control. The more we live, work, and think with AI, the more data centers we'll need. These new builds will include mega-campuses and AI-optimized facilities.

The biggest energy consumer in data centers is the compute hardware (GPUs, CPUs, networking), but the support infrastructure (monitoring and control, power distribution, UPS, cooling, and ventilation) consumes a massive share of the total load. Some estimates place cooling alone at up to 40% of total data center energy consumption in dense AI environments. In a future where the vast majority of data centers are AI data centers, the infrastructure around the compute becomes almost as important as the compute itself.



To power AI, analysts indicate the world may need to double, or even triple, its entire data center footprint by 2030.

ENABLING NEXT-GENERATION COOLING SYSTEMS

OPTIMIZE GRAY SPACE EFFICIENCY END-TO-END

Mitsubishi Electric understands the needs of all types of data centers, from enterprise data storage to Gen AI facilities. Our hardware solutions include the VFDs and PLCs you need for a high-performance, energy-efficient power and cooling infrastructure. These solutions are

fully integrated, secure, and exceptionally reliable. And they provide incremental and ongoing energy savings for more sustainable data center operations.



VFD



PLC



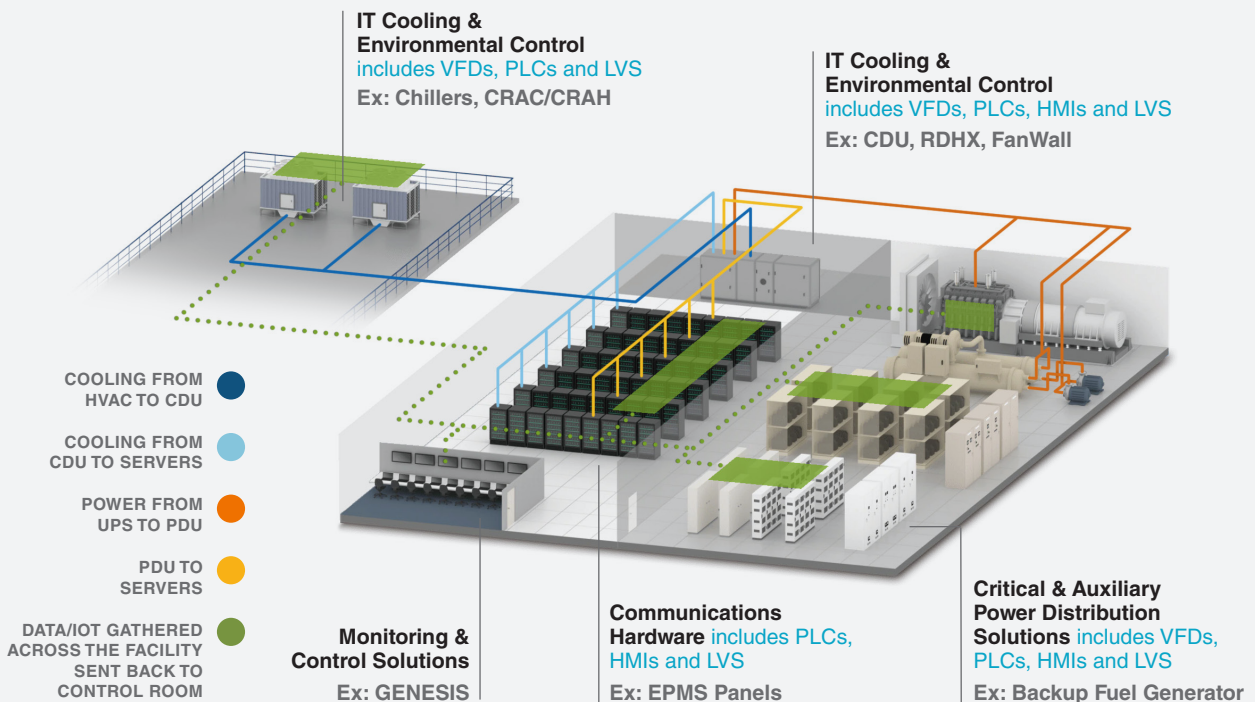
HMI



LVS

Our VFDs and PLCs are the hidden force behind efficient power and cooling infrastructure.

ENERGY EFFICIENCY END-TO-END



IT Cooling & Environmental Control

DELIVER OPTIMAL DATA CENTER CONDITIONS

Decades of experience in the air conditioning sector has helped us deliver increasingly energy-efficient solutions to the IT cooling market. Our expertise in industrial automation and precision control systems, combined with cutting-edge electronics and mechanical technologies make Mitsubishi Electric uniquely ready to take on the cooling challenges of AI data centers.

Together, our experience and expertise deliver a synergistic effect that increases cooling performance while significantly reducing energy consumption. We offer a range of IT cooling environmental control solutions that keep data center and server rooms in optimal conditions at all times. We also provide control systems for liquid cooling, which is rapidly shifting from emerging technology to operational necessity.



CDU with Mitsubishi Electric Industrial-Grade Control Systems



Liquid Cooling for Today's Needs and Tomorrow's

AI is rewriting the rules of the data center. Rack densities are climbing. Thermal loads are intensifying. Downtime is no longer an inconvenience. It's a business risk measured in millions.

That's why liquid cooling has moved from emerging technology to mission-critical infrastructure. And it's why Mitsubishi Electric is investing heavily in the future of intelligent liquid cooling control for both immersion cooling and direct-to-chip (D2C) liquid cooling systems.

Mitsubishi Electric delivers the advanced controls behind next-generation cooling architectures. From coolant distribution units (CDUs) to fully integrated hybrid cooling environments, our technologies are engineered to improve thermal performance, reduce energy consumption, and support long-term sustainability goals in the most demanding environments.

But cooling performance alone isn't enough.

Data center operators need infrastructure that integrates seamlessly, scales effortlessly, and adapts continuously

AI is "hot."
The future is *liquid*.

as AI workloads evolve. Mitsubishi Electric designs control systems that connect cleanly into the broader data center ecosystem, giving operators the flexibility to configure, customize, and expand cooling strategies without rebuilding the foundation underneath them.

The result? Future-proof cooling infrastructure designed not just for today's compute demands, but for what comes next.



Immersion Cooling
surrounds servers with liquid coolant.
Available in single and dual-phase

Direct-to-Chip (D2C) Cooling
brings liquid coolant directly over the
heat-generating components.
Available in single and dual-phase

CREATED WITH MIDJOURNEY AI

Mission-Critical Control for Liquid Cooling

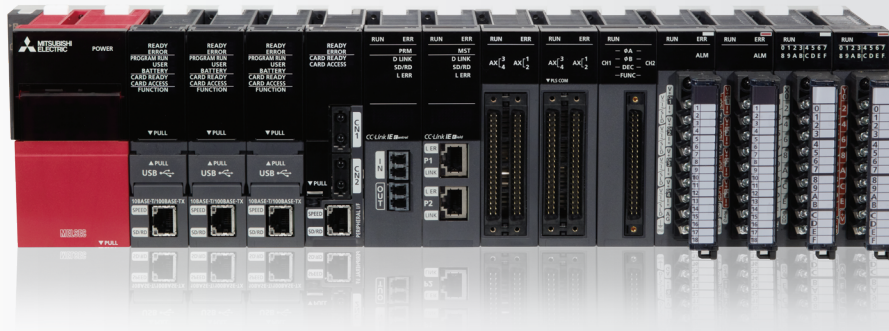
In an uncertain future where new chips abound, communication protocols evolve, and standards have not yet been established, Mitsubishi Electric solutions are ready for whatever lies ahead.

Our programmable logic controllers (PLCs) deliver the expandable I/O, fiber-optic communications, hot swapping, and reprogrammability to keep up with rapidly changing data center requirements. With a multi-CPU architecture, our PLCs can be easily deployed in a wide range of redundant configurations to meet your system's reliability requirements.

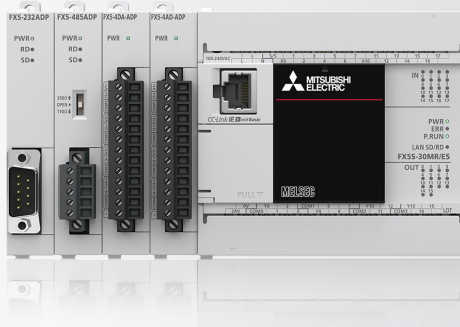


Learn
more about
our PLCs

iQ-R Series | An AI-ready PLC



iQ-F Series | Ideal PLC for space-restricted AI applications



The advanced monitoring capabilities in our variable frequency drives (VFDs) precisely match pump speed with heat demands in real-time. This reduces power consumption and operational costs long-term. If you're having harmonics issues, drives can be configured with filters to mitigate feedback and provide CDUs with clean, consistent power.

Our next-generation HMIs enhance connectivity, usability, and seamlessly integrate with higher-level information systems and automation devices. When used with our PLCs and VFDs, the HMIs can facilitate debugging and programming without having to open the box.



Learn
more about
our VFDs



Learn
more about
our HMIs

GOT3000 Series

High-definition, multi-touch display



Mitsubishi Electric Offers VFDs in Multiple Sizes

FR-A800

For facility-sized systems,
has built-in PLC

FR-F800

For facility-sized pumping applications,
has advanced PID control

FR-D800

For rack- or medium-sized
systems, has advanced networking
and built-in PID control

FR-E800

For rack-mounted CDU
applications, has built in PLC



INFRASTRUCTURE MANAGEMENT

VISUALIZE, HISTORIZE, ANALYZE, MOBILIZE INFORMATION

Unify data silos and bring the power of real-time intelligence to data center operations, even in environments with heterogeneous controls. Mitsubishi Electric GENESIS software unifies data and eliminates the switching between different PCs, servers, and systems, so you can get the insights you need when you need them. Brownfield and greenfield projects can both benefit from a DCIM overlay.

From any web-enabled device, you have complete visibility of power usage and available capacity, as well as power and cooling asset performance. Other advanced energy management software from Mitsubishi Electric includes the EnergyAnalytiX Module, which lets you monitor the efficiency of your UPS systems, visualize cost savings, drill down into causes of abnormal energy use, and more.

GENESIS software can be flexibly deployed in a wide variety of ways, including:

**Data Center Infrastructure Management
(DCIM)**

**Supervisory Control and Data Acquisition
(SCADA)**

Battery Management System

Fleet Deployment System



Learn more about
our infrastructure
management software

Control Software

When used for DCIM, this industry-leading software handles four common data center challenges.

- 1. OUTAGES** Know instantly if you have enough capacity to handle a potential failover.
- 2. POWER USE & COST** Know at a glance how and where power is used.
- 3. BILLING ACCURACY** Know exactly how much power each customer uses.
- 4. IT CAPACITY** Know the best location for additional hardware.

Complete facility visibility. Continuous monitoring of power consumption. Predictive analytics and advanced visualization. Anytime. Anywhere. On any device. All in real-time. This is how to increase energy efficiency and control data center costs.

By implementing the Solutions Accelerator, GENESIS helps you address infrastructure management (IM) challenges in the gray space. The software provides pre-built, industry-specific building blocks for rapid deployment of DCIM. It helps you:

- Follow proven best practices for design
- Reduce non-recurring engineering (NRE)
- Accelerate time to value
- Simplify overall lifecycle management
- Extend visibility and control to distributed assets with remote I/O
- Streamline connectivity between sensors, equipment, and control systems



POWERING THE DIGITAL WORLD

ENERGY-SAVING PERFORMANCE END-TO-END

Mitsubishi Electric offers a total power and cooling infrastructure solution that can significantly reduce running costs year after year. It's designed to enable flexible use of space and to achieve the highest possible energy efficiency without compromising performance.

Driven by massive AI expansion, U.S. data centers are projected to consume up to 17% of the nation's total electricity generation by 2030.

— ELECTRIC POWER RESEARCH INSTITUTE



Monitoring & Control

DELIVER TOTAL SYSTEM INTEGRATION

In air and liquid cooling systems, our industry-leading PLCs and VFDs deliver total system integration, data capture, and analytics across multiple operational assets. They support all major networks and are compatible with DCIM software. When combined with our spring clamp terminal block units and CPUs, our PLCs streamline installation, maintenance, and system design.

Energy-efficient drives improve the efficiency of motors in IT cooling systems and extend their life through advanced error detection. Implementing VFDs in cooling system fan and pump control significantly reduces energy consumption.

Mitsubishi Electric manufactures all these solutions, so you can count on their quality, performance, and backward/forward compatibility.

When combined
with permanent magnet
(PM) motors, energy
savings can be
up to 50%.

Mitsubishi Electric Monitoring and Control Systems include some of the industry's most advanced PLCs and VFDs, which greatly improve the efficiency of air and liquid cooling systems.



Critical & Auxiliary Power Distribution

ENSURE SAFE, RELIABLE POWER NETWORK OPERATION

Our state-of-the-art LVS (low voltage switchgear) delivers the durable, reliable breaking performance needed for stable and sustainable data center operation. It also achieves SF6free operation for a clean, energy-efficient environment.

An innovative design separates the main and control sections in our power-saving VCB (vacuum circuit breaker). This approach enables it to deliver superior workability, maintainability, reliability, and sustainability. It even captures power usage data on circuits.

Mitsubishi Electric also offers a wide variety of energy-measuring devices that reduce total costs through energy visualization.



Mitsubishi Electric offers Low Voltage Switchgear with superior durability and high impermeability, contributing to the stable operation and safety of data centers.



Uninterrupted Power Supply (UPS)

THE INDUSTRY'S HIGHEST RELIABILITY AND POWER DENSITY

Whether you operate a hyper scale data center that demands a power-dense UPS or a network that needs a compact single-phase backup, Mitsubishi Electric UPS systems are designed to be resilient and robust. These solutions are available through Mitsubishi Electric Critical Power Solutions (a Mitsubishi Group company).

With world-renowned IGBTs for converters and inverters, 3-level topology, and transformer-less UPS designs, Mitsubishi Electric has long been at the forefront of offering UPS with the highest efficiencies and unparalleled reliability. Others only estimate reliability. Mitsubishi Electric's installed base of high-end UPS systems has sustained load carrying capability of 99.9995% throughout their actual operational history*.

These UPS systems supply clean, continuous power to data centers and other critical equipment while significantly reducing operating costs, space requirements, and carbon footprint.

*SOURCE: MITSUBISHI ELECTRIC CRITICAL POWER SOLUTIONS

Mitsubishi Electric UPS systems deliver unrivaled reliability and superior efficiency to ensure your data center doesn't go dark.



MITSUBISHI ELECTRIC'S SOLUTIONS FOR DATA CENTERS

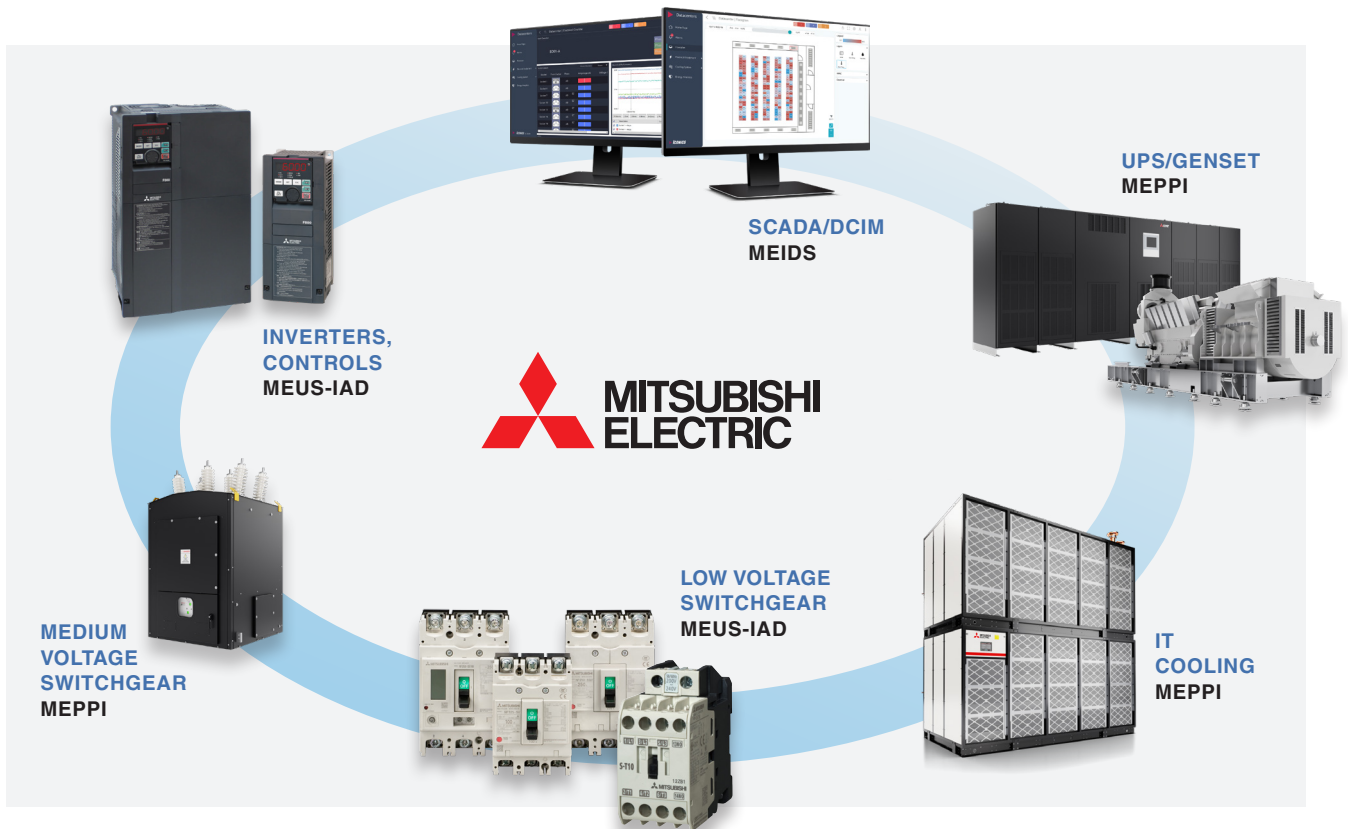
NO MATTER WHERE YOU ARE IN YOUR DATA CENTER JOURNEY, YOU CAN START WITH MITSUBISHI ELECTRIC.

Across our group companies, we offer proven technologies that support critical data center infrastructure, from power distribution and UPS systems to advanced cooling solutions, automation hardware, and infrastructure management software.

Mitsubishi Electric brings together industry-leading VFD warranties, seamless connectivity through GENESIS software, highly reliable UPS systems, and innovative cooling technologies designed for next-generation workloads.

While the applications may vary, the standard remains the same. Exceptional quality. Long-term reliability. Solutions engineered to perform in mission-critical environments.

Whatever your data center challenge, there's a Mitsubishi Electric solution behind it.



CONTINUED SUPPORT FOR CONTINUED SUCCESS

WE'RE WITH YOU ALL THE WAY

If you're ready to modernize your power and cooling infrastructure and management, we're ready to help. Mitsubishi Electric supports the entire lifecycle, from consulting to maintenance and operation. Our data center experts can design the right solution for your data center project. Start your journey to more sustainable and affordable data center operation today.

Let's change the future together.



By partnering with Mitsubishi Electric for your power and cooling infrastructure, you can count on:

- **Strong support network** including local field engineers and 1-800 phone line
- **Value-added services** such as start-up, onsite repair, and extended warranties (VFD 5-year warranty)
- **Complete solutions under one roof:** PLC, VFD and HMI hardware as well as SCADA software
- **Large inventory** with 95% of common items stocked locally
- **Extensive distributor network**

Smarter cooling and control systems start with Mitsubishi Electric.

Contact us to get started.



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