Business Solutions from Elecom Group supporting various infrastructures

We will provide solutions that meet all of our customers' needs, working with Elecom Group to create synergies.

Logitec

HAGIWARA Solutions

ELECOM
LIFESTYLE m INNOVATION

ForceMedia

DX ANTENNA

Providing solutions for specialized fields

Energy conservation

Disaster Prevention

Security

Medical

Information

Production Management

Education

Solution Catalog

Vol.1

HAGIWARA Solutions
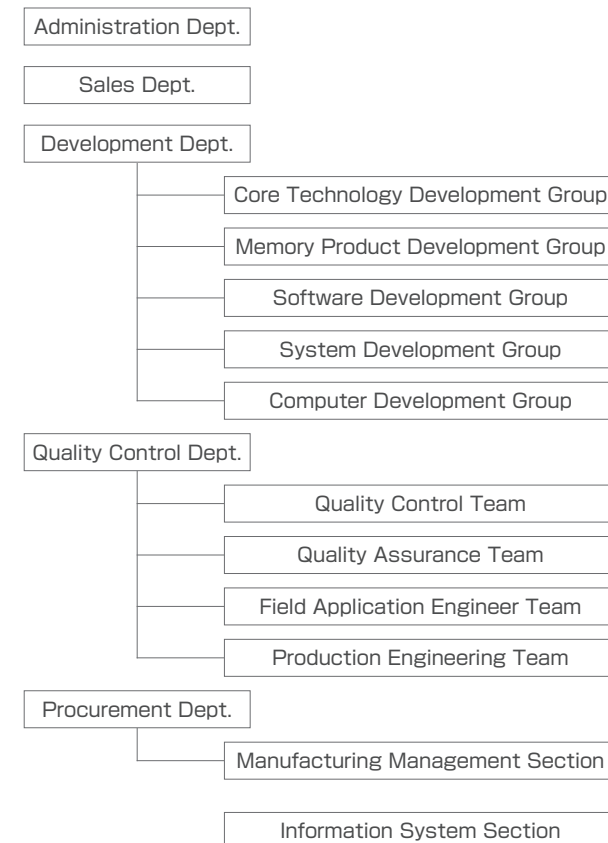
HAGIWARA Solutions

Our high-reliability storage products and industrial computing products, which pursue long-term stable operation of industrial equipment and systems, support social infrastructure.

Company Profile

Company Name	Hagiwara Solutions Co., Ltd.
Headquarters	8th Floor, Pacific Square Nagoya Nishiki, 2-5-12 Nishiki, Naka-ku, Nagoya, Aichi 460-0003 Japan
Established	July 2011
Capital	JPY 50,000,000
Shareholder	Elecom Co., Ltd. (100%)
President and CEO	Teruhiko Nagashiro

Hagiwara Solutions has developed a solid track record as a pioneer in flash storage for industrial purposes.
Our products are designed and manufactured in Japan, and we are proud to have obtained unwavering customer satisfaction with the highest quality and reliable products.

Organization Chart

- Administration Dept.
- Sales Dept.
- Development Dept.
  - Core Technology Development Group
  - Memory Product Development Group
  - Software Development Group
  - System Development Group
  - Computer Development Group
- Quality Control Dept.
  - Quality Control Team
  - Quality Assurance Team
  - Field Application Engineer Team
  - Production Engineering Team
- Procurement Dept.
  - Manufacturing Management Section
  - Information System Section

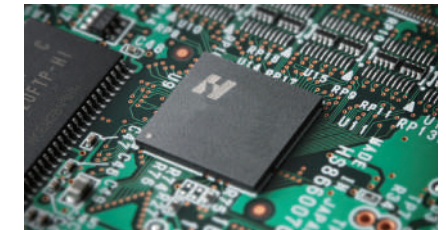## Hagiwara Strengths

1 Technical Development Capability

Our long-standing experience, expertise, and strong development capabilities enable us to provide storage products that support the long-term stable operation of industrial equipment.

2 In-house developed firmware

By developing our own firmware, we are able to create storage products that are optimized for industrial use.
Furthermore, we are able to respond quickly to any issues that may arise, ensuring efficient troubleshooting in case of system failures.

3 Product Testing

We conduct rigorous testing of quality, performance, and reliability using various test equipment held by the Elecom Group, taking into account the possibility of use under harsh conditions.

4 Commitment to Quality

Our high-quality products are backed by our extensive experience and expertise, as well as a thorough quality control system and shipping inspection process.
Performing burn-in testing before product shipment greatly contributes to reducing the initial failure rate.

5 Reliable Technical Support System

We work closely with our development sites to provide detailed and prompt support through our sales offices and authorized dealers.

Industrial SSD

Hagiwara Solutions' industrial SSDs, which pursue reliability.

A high-speed PCIe Gen4 compatible model with a maximum capacity of 8TB (7,680GB) and temperature expansion compatibility has been released.

We offer various form factors to meet our customers' needs.

Industrial SD Cards

SD card for industrial embedded use, which allows you to grasp the product life.

With high reliability and durability, supporting industrial use such as OS storage, surveillance cameras, and drive recorders.

Have chip type products available for implementation, and can be used for a wide range of applications.

3D NAND NVMe

Interface	PCIe Gen4 x4
Form Factor	U.2/M.2 2280/CFexpress
Capacity	240GB~7,680GB
Operating Temperature	0℃~70℃ / −40℃~85℃
Maximum Transfer Speed (Sequential)	R:3,500 MB/sec W:3,000 MB/sec
Maximum Transfer Speed (Random)	R:600,000 IOPS W:450,000 IOPS

· TRIM Command Support
· Supports NCQ
· Error correction using LDPC
· User Bit Error Rate < 1sector per 10^17 bits read
· Temperature Monitoring Function
· Internal RAID Function
· Livemonitor Lifetime Diagnostic Tool
· Power Loss Protection (PLP) *U.2 only
· RoHS Compliant
· CE, FCC, VCCI, UKCA Compliant

3D NAND SATA

Interface	SATA6.0
Form Factor	CFast/2.5inch/mSATA/ M.2 2242、2280
Capacity	40GB~1,920GB
Operating Temperature	0℃~70℃ / −40℃~85℃
Maximum Transfer Speed (Sequential)	R:520 MB/sec W:450 MB/sec
Maximum Transfer Speed (Random)	R:60,000 IOPS W:61,000 IOPS

· TRIM Command Support
· Supports NCQ
· Error correction using LDPC
· ATA Security Command Support
· Temperature Monitoring Function
· Internal RAID Function
· VWF (Virtual Write Filter) Function Supported
· Livemonitor Lifetime Diagnostic Tool
· RoHS Compliant
· CE, FCC, VCCI Compliant

2D NAND SATA

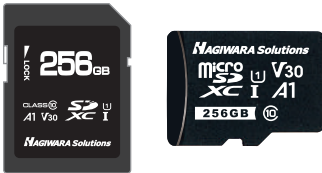| Interface	SATA6.0
Form Factor	CFast/2.5inch/mSATA
Capacity	7GB~120GB
Operating Temperature	0℃~70℃ / −40℃~85℃
Maximum Transfer Speed (Sequential)	R:500 MB/sec W:380 MB/sec
Maximum Transfer Speed (Random)	R:54,000 IOPS W:61,000 IOPS

· 2D NAND SLC Model
· Fully Fixed Specifications
· Highly Resistant To Electrical Breakdown
· TRIM Command Support
· ATA Security Command Support
· Livemonitor Lifetime Diagnostic Tool
· Customization Support For Compatibility
· RoHS Compliant

3D NAND SD Memory Card

Interface	SD 3.01
Form Factor	SD/microSD
Capacity	16GB~256GB
Operating Temperature	−25℃~85℃ / −40℃~85℃
Maximum Transfer Speed (Sequential)	R:UHS-1 90MB/sec W:UHS-1 80MB/sec
Maximum Transfer Speed (Random)	—

· Speed Class 10
· UHS Speed Grade 1
· Application Performance Class A1
· Read After Write
· Improved random write performance
· Livemonitor Lifetime Diagnostic Tool
· RoHS Compliant
· CE, FCC, VCCI, UKCA Compliant

2D NAND microSD Memory Card

Interface	SD 3.01
Form Factor	SD/microSD
Capacity	512MB~256GB
Operating Temperature	−25℃~85℃ / −40℃~85℃
Maximum Transfer Speed (Sequential)	R:UHS-1 90MB/sec W:UHS-1 80MB/sec
Maximum Transfer Speed (Random)	—

· Speed Class 6/10
· Three types of flash memory can be selected depending on the application
· Stable speed performance
· Equipped with power failure countermeasures
· High physical endurance against bending/twisting
· Livemonitor Lifetime Diagnostic Tool
· RoHS Compliant

2D NAND 1Chip

Interface	SD 3.01
Form Factor	100Ball BGA
Capacity	512MB~16GB
Operating Temperature	−40℃ ~ 85℃
Maximum Transfer Speed (Sequential)	R:89MB/sec W:73MB/sec
Maximum Transfer Speed (Random)	—

· On-board storage
· 100Ball BGA package for industrial use
· 2D NAND SLC model
· Ball pitch 1mm
· Equipped with power failure countermeasures
· Livemonitor Lifetime Diagnostic Tool
· RoHS Compliant

Industrial USB Flash Drives

Hagiwara Solutions' industrial USB flash drives features complete fixed specifications for high stability and reliability.

By fixing the specifications, stable operation and compatibility are ensured, and the product can be used for a long period of time.

We also support various types of customization and respond flexibly to customer requests.

Software

LIve Monitor

VWF Virtual Write Filter

"LiveMonitor" is software that monitors flash storage based on S.M.A.R.T. information.
It visualizes the internal status of the drive, enabling access analysis and life prediction.

Additionally, it includes original software called "Virtual Write Filter" that suppresses data corruption caused by unexpected power interruptions, contributing to system availability.

3D NAND USB3.0

Interface	USB3.0 (Super Speed)
Form Factor	USB flash drives(small size)
Capacity	4GB~128GB
Operating Temperature	0℃~70℃
Maximum Transfer Speed (Sequential)	R:270MB/sec W:140MB/sec
Maximum Transfer Speed (Random)	—

・Compact and lightweight model
・Supports high-speed transfer USB 3.0
・Stable signal quality
・Reliable case with high strength for bending/twisting, etc.
・Livemonitor Lifetime Diagnostic Tool
・Equipped with access LED
・Abundant customization menu
・RoHS Compliant
・CE, FCC, VCCI Compliant

3D NAND USB2.0

Interface	USB 2.0 (High Speed)
Form Factor	USB flash drives
Capacity	4GB~128GB
Operating Temperature	0℃~70℃
Maximum Transfer Speed (Sequential)	R:35MB/sec W:30MB/sec
Maximum Transfer Speed (Random)	—

・Supports high-speed transfer USB 2.0
・Stable signal quality
・Reliable case with high strength for bending/twisting, etc.
・Livemonitor Lifetime Diagnostic Tool
・Equipped with access LED
・Abundant customization menu
・RoHS Compliant
・CE, FCC, VCCI Compliant

2D NAND USB3.0

Interface	USB 3.0 (High Speed)
Form Factor	USB flash drives
Capacity	2GB~16GB
Operating Temperature	0℃~70℃
Maximum Transfer Speed (Sequential)	R:40MB/sec W:30MB/sec
Maximum Transfer Speed (Random)	—

・2D NAND SLC Model
・Fixed BOM
・Compact and lightweight model
・Supports high-speed transfer USB 3.0
・Stable signal quality
・Reliable case with high strength for bending/twisting, etc.
・Livemonitor Lifetime Diagnostic Tool
・Equipped with access LED
・Abundant customization menu
・RoHS Compliant
・CE, FCC, VCCI Compliant

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dashboard

Show Overview
　Displays device name, serial number, temperature, capacity, etc.

Displays S.M.A.R.T. information
　Displays numerical values for each item.
　Displayed items vary depending on the device.

Displays remaining life
　Displays remaining lifespan with color and status:
　🟩 Good: sufficient lifespan remaining
　🟨 Caution: lifespan is running low
　🟥 Exchange: lifespan has expired

access analysis

Access Analysis
　Displays various information such as transfer size for read/write operations, frequency of sequential/random access, and more.

Acquisition of SSD internal information
　Allows you to check the usage status of each block and select the optimal product capacity and type.

Enables understanding of the optimal method of accessing the device.
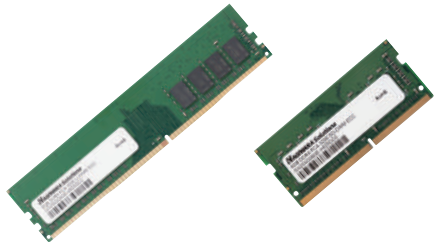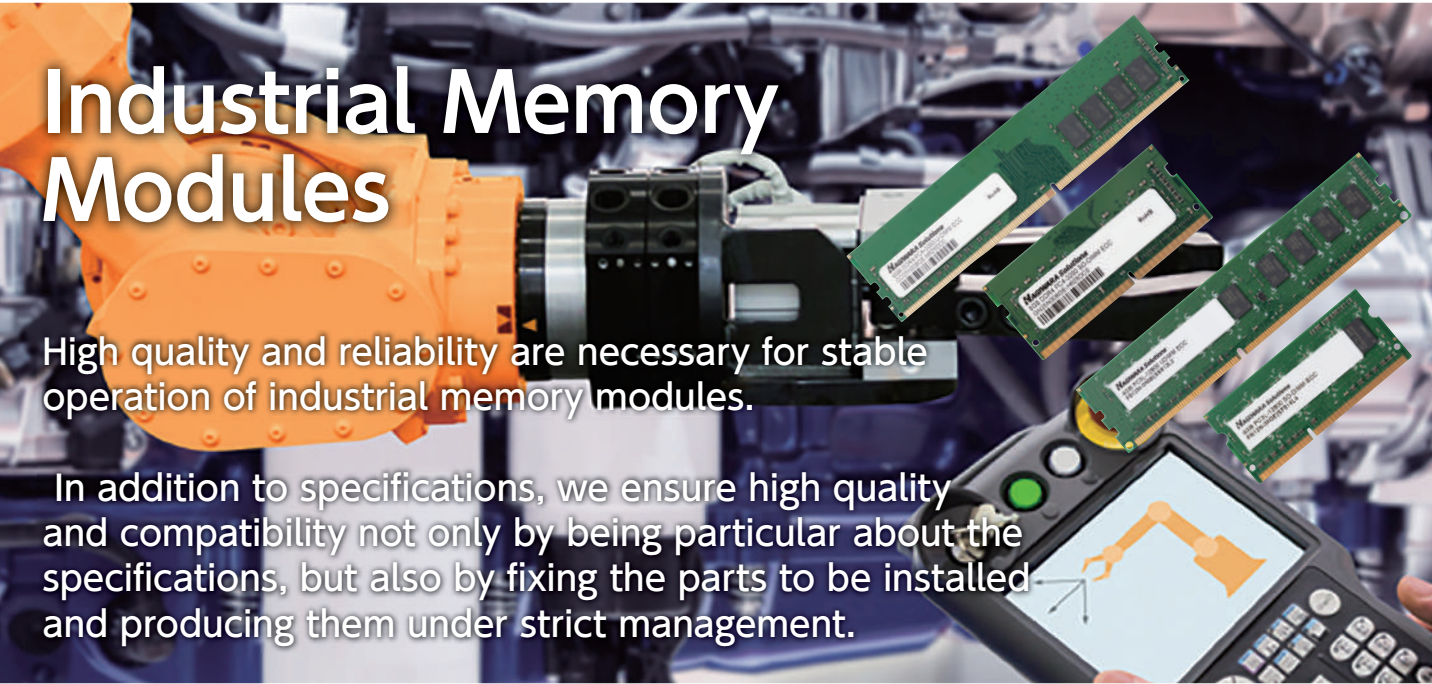
VWF（Virtual Write Filter)

Our Original software "VWF (Virtual Write Filter)" that complements the UWF (Unified Write Filter) of Windows® 10 and makes it possible to protect the system data.
It prevents data corruption caused by unexpected power interruptions and contributes to increasing system availability.

System startup　　　　　　System shutdown
UWF activated　UWF deactivated
UWF
VWF

Industrial Memory Modules

High quality and reliability are necessary for stable operation of industrial memory modules.
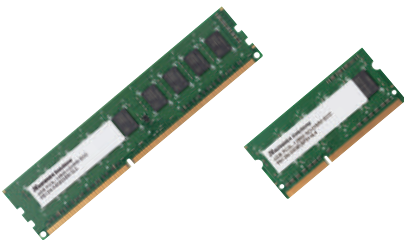
In addition to specifications, we ensure high quality and compatibility not only by being particular about the specifications, but also by fixing the parts to be installed and producing them under strict management.

Coating

DDR4

Memory Standard	PC4-25600
Operating Frequency	3200MHz
Capacity	4GB～32GB
DRAM Manufacturer	Micron
ECC	With/without
Operating Temperature	0～85℃

・Electrolytic gold terminals
・Chamfer support
・Fixing parts
・Full outgoing inspection
・5-year warranty
・Analysis in case of failure
・Traceability is possible.
・Customizable
・Conformal coating support
・4M management, PCN notification
・Supports environmental data

DDR3

Memory Standard	PC3L-14900/12800
Operating Frequency	1866/1600MHz
Capacity	4GB～8GB
DRAM Manufacturer	Micron
ECC	With/without
Operating Temperature	0～85℃

・Electrolytic gold terminals
・Chamfer support
・Fixing parts
・Full outgoing inspection
・5-year warranty
・Analysis in case of failure
・Traceability is possible.
・Customizable
・Conformal coating support
・4M management, PCN notification
・Supports environmental data

Conformal coating

Coating Material	Urethane acrylate
Appearance	Transparent
Dust Resistance	◎
Moisture resistance	◎
Gas resistance	◎
Salt water resistance	◎
Oil resistance	◎
Heat resistance	−40℃～150℃
RoHS	◎
Flame retardant	UL94 V-0
Environmental impact (VOC regulation)	◎
Repairability	△
MIL-I-46058C	◎

Coating Performance

It is an optional service that enables use in a wider range of applications, such as harsh or hazardous environments.

Differences between industrial and retail products

Industrial products are products that are designed to be used in systems that require 24/7 operation, with features such as product performance, supply period, and durability that are suitable for the on-site environment.

The differences from retail products and the advantages of using industrial products are described below.

Differences between industrial and retail products

	Industrial Products (SLC Products)		Retail Products	
Applications		For writing applications such as OS, application storage, log storage, etc.		For general users such as smartphones and tablets
Rewrite life	◎	50,000 to 100,000 times/1Block	×	No guaranteed value. Actual value is less than a few hundred times.
Data Retention	◎	1 year after product life	×	6 months or less after product life
Quality	◎	By using industrial specifications and conducting burn-in, the initial failure rate of NAND can be further reduced, achieving stable operation.	×	Selecting components based on the situation at hand. Quality is unstable
Supply time	◎	1 process Approx. 2 to 3 years	×	No guarantee of supply period
Support	◎	Before implementation: Technical support starting from the product development stage. After implementation: Providing analysis reports and proposing measures to prevent recurrence in case of operational issues	×	Replacement only in case of defects

Examples of Major Problems in Retail Products

CASE-1

Problem

After starting operation, failures occur frequently within less than a year.

Reason

They reached their end of life quickly and became unusable.

Machine tool

CASE-2

Problem

Even products with the same model number may have individual differences, which can lead to recognition failures or operational issues.

Reason

Because the specifications were not fixed, even though the products appeared to be the same, they were actually different inside.

Medical equipment

CASE-3

Problem

The sudden discontinuation of production resulted in evaluation man-hours for successor products. Not only did they occur suddenly, but they were frequent.

Reason

The supply period is not guaranteed, and it is difficult to inform customers in advance of the end of sales.

Vehicle equipment

CASE-4

Problem

The manufacturer is asked to provide support for problems, but the only response is to replace the product, which prolongs the problem.

Reason

The manufacturer does not have an analysis support system because it is a retail product.

Manufacturing equipment

The above problems do not occur with industrial products.

Security

To protect information from various threats, security measures are necessary.

It is important to proactively address measures such as preventing data tampering, protecting against information leaks in the event of loss, and other potential risks to safeguard critical data.

At Hagiwara Solutions, we provide tools such as virus checkers that enable safe data management while maintaining ease of use and convenience, ensuring the highest level of security.
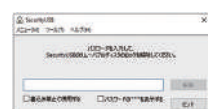

Vaccine USB3

Our virus checking and removal tool in USB flash drive format features McAfee's virus checking engine.
Just connect the product to the target computer and it will automatically scan, as well as save log data.
You can visually confirm the results through the product's LED indicator.

No infection   infection

· Dramatically reduces virus checking time
· Save scan results as a log
· Timer scan function
· Asset information collection function
· Centralized management function
· License extension is available without any hassle.
· Operation management tool INFO BANKER support

Security USB/HDD

USB flash drives/HDD drive with security features.
Various security features such as password lock, hardware encryption, virus check, etc.

password lock   Made by Trellix Equipped with scanning engine

· Password lock function
· AES 256-bit hardware encryption
· Virus check function
· Automatic software update
· Data rescue function
· Copy guard function
· Flexible custom services
· Operation management tool INFO BANKER support

USB with special functions

Hagiwara Solutions' patented UDRW Technology

The USB flash drives has two areas: a CD-ROM drive and a removable drive, all on one device. Furthermore, it is possible to incorporate a "hidden area" that is not recognized by the operating system.
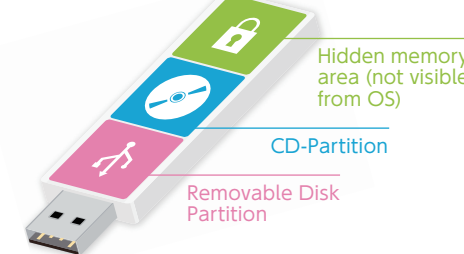
We offer USB flash drives which have a variety of special functions as listed below.

UDRW G5

This is a special USB flash drives that has three areas and can be developed using dedicated software.

Three areas

Hidden memory area (not visible from OS)

CD-Partition

Removable Disk Partition

Concealment: an area of a device that is not recognized by the operating system.
CD-ROM: Read-only, bootable area
Removable: read-write memory area

By combining the functions of this USB flash drives with custom software and data created by customers, it is possible to create a unique USB flash drives.

· Three areas
· Customizable
· AES 256-bit hardware encryption
· Unique IDs
· Password lock

UDRW G5 SDK (Software Development Kit)

CD Memory2

This is a read-only USB flash drives that is recognized as a CD-ROM drive.

Even though it is a USB flash drives, it is recognized as a CD-ROM drive.

Since it is recognized as a CD-ROM drive by the operating system, writing to it is not possible. It is possible to create a product where programs such as installers or updaters automatically start running just by inserting the USB flash drives.

· Since it is read-only, it prevents accidental deletion or tampering.
· Prevention of virus infection (writing)
· It can only be written using proprietary software.
· This product can be used even without a CD drive, as long as there is a USB port available.

Recovery USB

A USB flash drives compatible with Microsoft's recovery media.

Compared to DVD media, this USB flash drives achieves high capacity, small size, and faster transfer speeds.
Even on older PCs that don't have a DVD/CD drive, you can use it as long as there is a USB flash drives port.

Comparison

Item	RecoveryUSB	DVD-ROM
Read/write speed	Fast !	Slow
CD/DVD Drive Non-equipped models	Available	Not available
Capacity	Large 8/16/32GB	Small 4.8GB
Size	Small	Large