

ELECOM Group

Leveraging the synergy of the Elecom Group and utilizing our accumulated product development expertise and experience, we propose products and solutions across diverse business domains.



ELECOM

We provide solutions to address challenges across various industries, focusing primarily on IT peripherals.

DX ANTENNA

We provide one-stop solutions, including advanced transmission technologies cultivated over 70 years.

tama's

Since its founding in 1976, we have been a domestic electronics manufacturer focused mainly on smartphone accessories and charging products, distributed through convenience stores and other retail channels.

Logitec

We offer superior custom PCs for industrial and commercial use, designed for reliable, long-term operation.

groxi

We offer comprehensive, one-stop services for network design, construction, maintenance, and operation.

ELECOM Healthcare

Bringing "medical care and healthcare" closer to you, to protect your "health."

HAGIWARA Solutions

Our flash storage products for industrial equipment support long-term, stable system operation.

NIPPON ANTENNA

We provide comprehensive support from terrestrial digital broadcasting, CATV, and satellite reception equipment to electrical communication construction and maintenance, supporting the broadcasting and communication environment.

TESCOM

Under the concept of "creating beauty," we provide beauty-care and cooking appliances that fit into our customers' daily lives.

HAGIWARA Solutions

Hagiwara Solutions Co.,Ltd.

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Solution Catalog

Vol.2



HAGIWARA Solutions

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

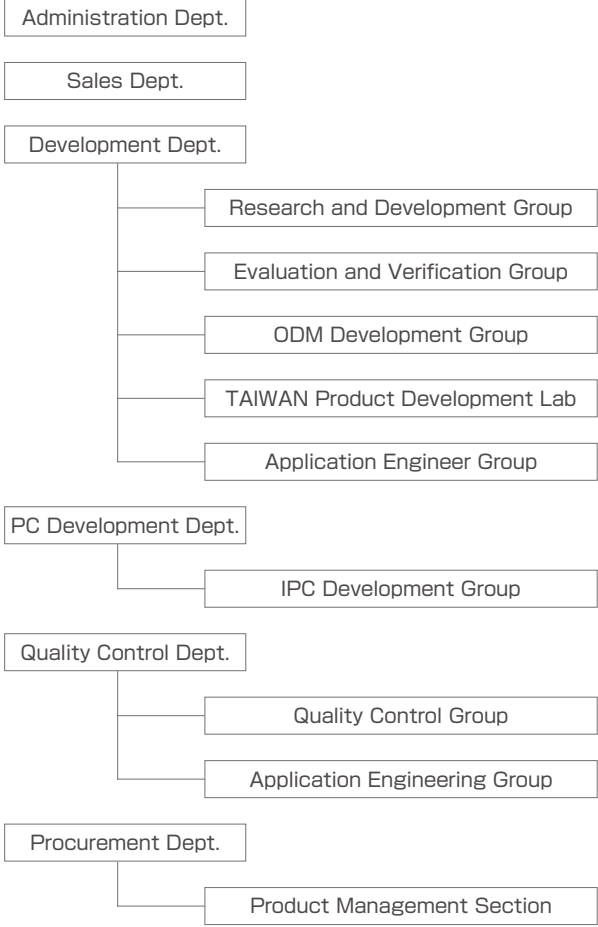
and reliability

Company Profile

Company Name	Hagiwara Solutions Co., Ltd.
Headquarters	9th Floor, DP Square Higashi-Sakura, 1-14-11 Higashi-Sakura, Higashi-ku, Nagoya, Aichi, 461-0005
Established	July 2011
Capital	JPY 50,000,000
Shareholder	Elecom Co., Ltd. (100%)
President and CEO	Junji Hada

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



Hagiwara Strengths

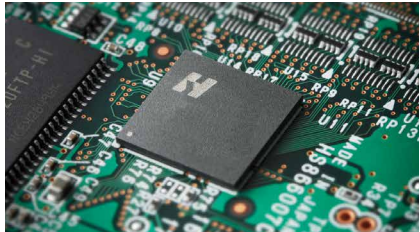
1 Technical Development Capability

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 Firmware Development

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 to ensure reliable performance even under harsh operating 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, designed for uncompromising reliability.

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

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



3D NAND NVMe

Interface	PCIe Gen4 x4
Form Factor	U.2/M.2 2242, 2280/ CFexpress/E1.S
Capacity	240GB~7,680GB
Operating Temperature	0℃~70℃ / -40℃~85℃
Maximum Transfer Speed (Sequential)	R : 7,210 MB/sec W : 4,410 MB/sec
Maximum Transfer Speed (Random)	R : 822,000 IOPS W : 816,000 IOPS

- TRIM Command Support
- Supports NCQ
- Error correction using LDPC
- User Bit Error Rate < 1sector per 10¹⁷ 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 M.2 2242, 2280
Capacity	40GB~1,920GB
Operating Temperature	0℃~70℃ / -40℃~85℃
Maximum Transfer Speed (Sequential)	R : 550 MB/sec W : 520 MB/sec
Maximum Transfer Speed (Random)	R : 66,000 IOPS W : 62,000 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 PATA

Interface	Removable / Fixed disk
Form Factor	CompactFlash
Capacity	512MB~8GB
Operating Temperature	0℃~55℃
Maximum Transfer Speed (Sequential)	R : 45 MB/sec W : 24 MB/sec
Maximum Transfer Speed (Random)	—

- 2D NAND SLC Model
- Fully Fixed Specifications
- Static wear levelling function
- ATA Security Command Support
- Livemonitor Lifetime Diagnostic Tool
- Customization Support For Compatibility
- RoHS Compliant

Industrial SD Cards

SD card for industrial embedded use, which allows you to monitor the product lifespan.

With high reliability and durability, these cards support industrial applications such as OS storage, surveillance cameras, and drive recorders.

We also offer chip-integrated implementation solutions for a wider range of applications.



3D NAND SD Memory Card

Interface	SD 3.01
Form Factor	SD
Capacity	64GB~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

3D NAND microSD Memory Card

Interface	SD 3.01
Form Factor	microSD
Capacity	64GB~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

Industrial USB Flash Drives

Hagiwara Solutions' industrial USB flash drives feature 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.

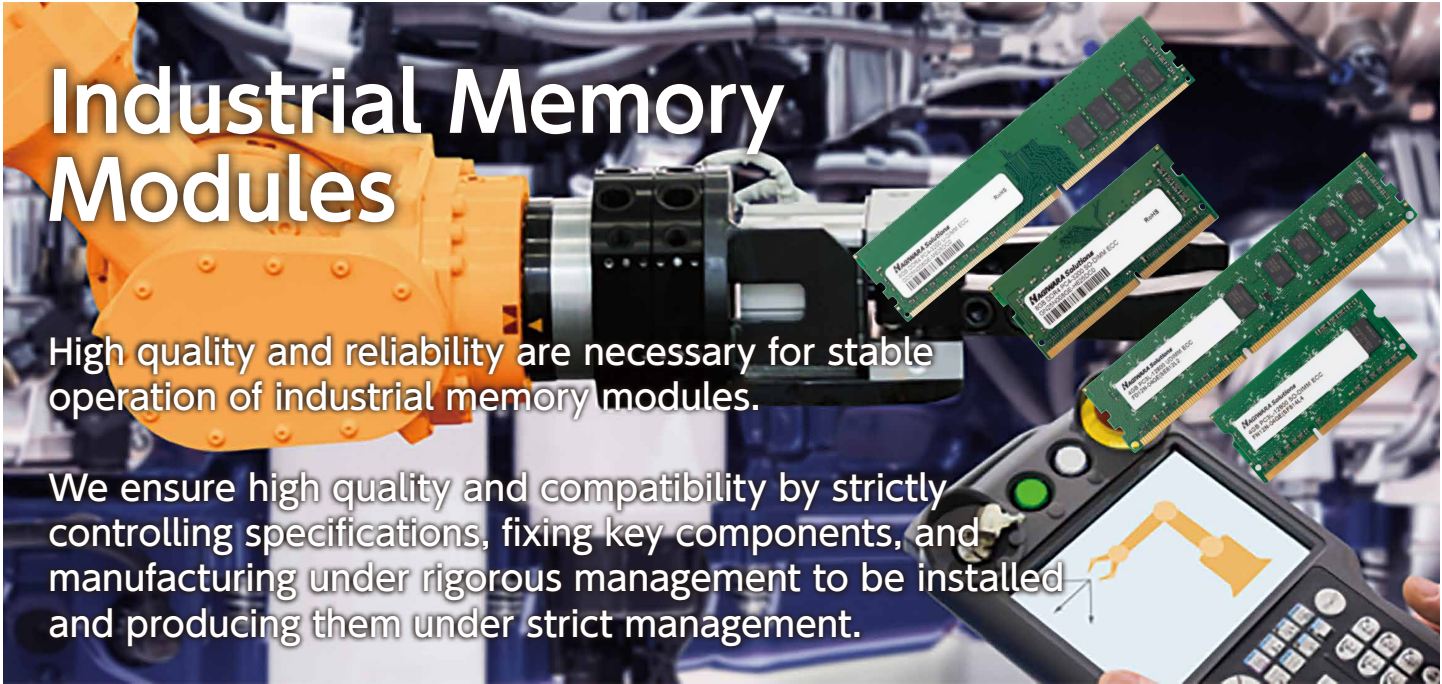
We also support various types of customization and respond flexibly to customer requests.



Industrial Memory Modules

High quality and reliability are necessary for stable operation of industrial memory modules.

We ensure high quality and compatibility by strictly controlling specifications, fixing key components, and manufacturing under rigorous management to be installed and producing them under strict management.




3D NAND USB 5Gbps

Interface	USB 5Gbps (Super Speed)
Form Factor	USB flash drives(small size)
Capacity	64GB~512GB
Operating Temperature	-20℃~85℃
Maximum Transfer Speed (Sequential)	R : 140MB/sec W: 120MB/sec

- Compact and lightweight model
- Supports super-speed transfer USB 5Gbps
- Stable signal quality
- Reliable case with high strength for bending/twisting, etc.
- Livemonitor Lifetime Diagnostic Tool
- Equipped with access LED
- Extensive customization options
- RoHS Compliant
- CE, FCC, VCCI Compliant

3D NAND USB2.0

Interface	USB2.0 (High Speed)
Form Factor	USB flash drives
Capacity	64GB~512GB
Operating Temperature	0℃~70℃
Maximum Transfer Speed (Sequential)	R : 38MB/sec W: 30MB/sec

- 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
- Extensive customization options
- RoHS Compliant
- CE, FCC, VCCI Compliant

External SSD

Interface	USB 10Gbps (Super Speed+)
Form Factor	External SSD
Capacity	240GB~1,920GB
Operating Temperature	0℃~55℃
Maximum Transfer Speed (Sequential)	R : 1,000MB/sec W: 1,000MB/sec

- Industrial-grade product
- Supports super-speed transfer USB 10Gbps
- Up to 2TB
- Stable signal quality
- Cable retention screw holes
- Shock and vibration resistance
- Livemonitor Lifetime Diagnostic Tool
- RoHS Compliant
- CE, FCC, VCCI Compliant
- USB Type-C to USB Type-A cable included

DDR5

Memory Standard	PC5-44800
Operating Frequency	5600MHz
Capacity	8GB~32GB
DRAM Manufacturer	SK Hynix
ECC	With/without
Operating Temperature	0℃~85℃/−40℃~85℃

- Electrolytic gold terminals
- Chamfer support
- Fixed BOM
- Full outgoing inspection
- 5-year warranty
- Analysis in case of failure
- Full traceability
- Customizable
- Conformal coating support
- 4M management, PCN notification
- Supports environmental data

DDR4

Memory Standard	PC4-2133/2400/2666/3200
Operating Frequency	17000/19200/21300/25600MHz
Capacity	4GB~32GB
DRAM Manufacturer	Micron/SK Hynix/Winbond
ECC	With/without
Operating Temperature	0℃~85℃

- Electrolytic gold terminals
- Chamfer support
- Fixed BOM
- Full outgoing inspection
- 5-year warranty
- Analysis in case of failure
- Full traceability
- 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℃/−40℃~85℃

- Electrolytic gold terminals
- Chamfer support
- Fixed BOM
- Full outgoing inspection
- 5-year warranty
- Analysis in case of failure
- Full traceability
- Customizable
- Conformal coating support
- 4M management, PCN notification
- Supports environmental data

We offer USB flash drives which have a variety of special functions as listed below.



The screenshot shows the Wondershare PDFelement dashboard. At the top, there's a header with the logo and navigation links. Below the header, there are several key performance indicators (KPIs) displayed as cards: '10' (likely documents), '9' (likely users), '8' (likely projects), and '14' (likely tasks). To the right of these cards, there are two charts: a line chart on the left and a donut chart on the right. The line chart shows a trend over time, and the donut chart shows a distribution of data. At the bottom, there are more detailed charts and tables, including a bar chart and a table with columns for 'Document Name', 'Status', and 'Created At'.

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- The screenshot shows the homepage of the Shimane University of Education. At the top, there is a blue header with the university's name in Japanese and English. Below the header, there is a navigation bar with links to 'Home', 'About Us', 'Admission', 'Research', 'International', and 'Contact Us'. The main content area features three circular charts. The first chart is titled 'Shimane University of Education' and shows a value of 12. The second chart is titled 'Shimane University of Education' and shows a value of 12. The third chart is titled 'Shimane University of Education' and shows a value of 12.

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- The screenshot displays the INFO BANKER Cloud web application. The header features the logo and the text 'INFO BANKER Cloud' with 'インフォバンカー' and 'クラウド' in Japanese. Below the header, there's a navigation bar with a search field. The main content area includes a sidebar on the left with a tree view. The central dashboard contains several widgets: a bar chart, a line chart, and several data tables. On the right side, there are two large numerical displays showing '0' and '38'.

VaccineUS3 診断性診断レポート

株式会社 株式会社 株式会社

2023/06/16

対象患者に対する診断性を向上させるため、レポートには、検出された診断性の詳細と検出された対象をまとめたリストがあります。

新型コロナウイルス

検出結果	検出率	検出率
陽性	109	9.8

実行日時 2023/06/16 14:23:33

製品名 VaccineUS3

実行バージョン 3.1.1

CyberShield標準バージョン 3.1

診断性診断 結果 WindowsCE

検出率 - テスト結果 109

検出率 - テスト結果 9.8

印刷した結果のコンテキスト名 株式会社 株式会社

株式会社 株式会社

Three areas

- Hidden memory area (not visible from OS)
- CD-Partition
- Removable Disk Partition

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



- Since it is read-only, it prevents accidental deletion or tampering.
- Prevents virus infections (write-protected)
- 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.

Software



"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.



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.

By acquiring internal SSD information, it is able to monitor the usage status of each block. Optimal when determining the most suitable 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)", complements the UWF (Unified Write Filter) of Windows® 10 and makes it possible to protect system data.

It prevents data corruption caused by unexpected power interruptions and contributes to increasing system availability.



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
P/E Cycles	30,000 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
Product Longevity	1 process Approx. 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.