Panasonic
INDUSTRY

Your Committed Enabler

# Bundle solution for motion application

Servo drives • Motion controller
PLC • HMI • Communication


**Short overview 2023**

# Bundle solution for motion application

The factory of the future will reach a new level of productivity, effectiveness, and profitability thanks to comprehensive communication. Panasonic Industry Europe's equipment and components offer state-of-the-art Industry 4.0 features, as connectivity, energy efficiency, reliability, and robustness play a crucial role in modern production environments. Not only are our products like PLCs, servo drivers and motors, sensors, touch terminals, and our newest development, the GM1 motion controller, easily connectable, but also can all products be integrated into existing production environments.

**FP series PLCs**
The PLC comes already equipped with the functionality required for position control tasks.

**MINAS A6 series servo drives**
Highly dynamic servo drives with state-of-the-art technology. Large power range (50W to 15kW) combined with a light-weight and compact design.

**Motion Controller GM1**
Motion controllers offer a compact solution for complex motion control applications. Panasonic Industry presents the first motion controller in its comprehensive lineup: the GM1 .

3 Year Warranty

## Solutions for Industry 4.0

**HM touch terminals**
Touch terminals allow humans and machines to interact with each other. Panasonic's innovative touch terminals are optimally suited both for factory and building automation.

**Corvina Cloud – The IIoT Cloud solution**
It is an application designed for the supervision of plants in a user-friendly manner. Using this application, users and maintenance staff are able to connect to remote machines, to configure users, devices, assign roles and grant permissions. Corvina Cloud is an OpenVPN- and SSL-based solution.

CORVINA CLOUD

**Motion control libraries, configuration and programming software**
The PLC programming software Control FPWIN Pro (compliant with IEC 61131-3) and the free configuration software PANATERM, M-SELECT and GM Programmer shorten the time required for commissioning. In addition, you can download motion control libraries for free..


**Communication unit FP-I4C**
Working like a data collector, the FP-I4C connects programmable controllers to the distributed control system and thus enables remote access even for small systems.

# FP-I4C

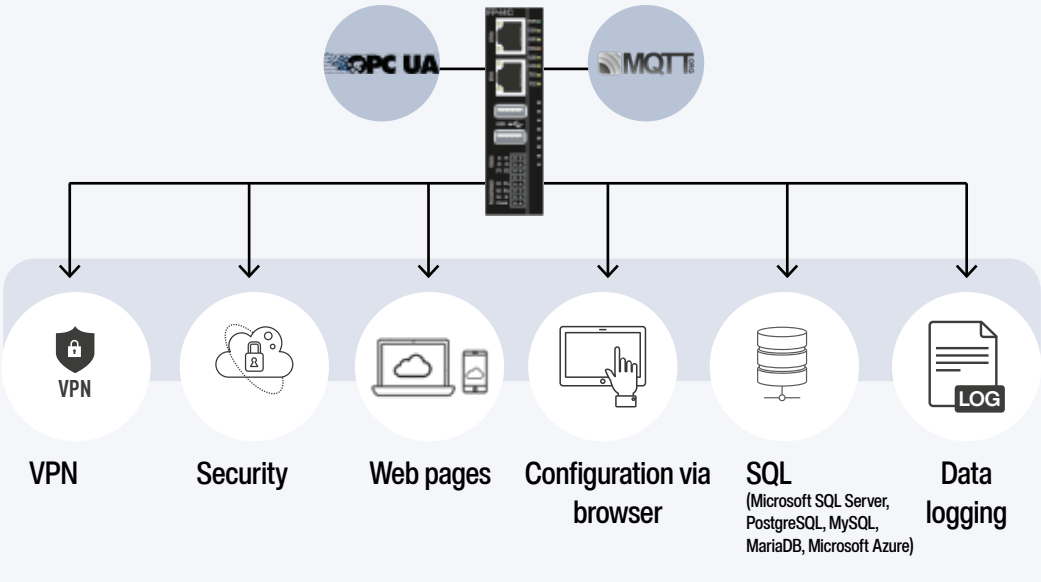
## The IIoT gateway

- Web server with HTML5 pages for mobile and PC connectivity
- Corvina Cloud with integrated VPN for remote access to the PLC (remote maintenance)
- Expandable with I/O units of the FP0R PLC series to collect information from sensors and actuators
- Sending files via FTPS client / server services
- Data management: storage of information in the internal memory or on a USB memory stick
- Excellent connectivity: two Ethernet ports (separate), 2 USB ports, 1 serial RS232C / RS485 port
- Configurable via internet browser and with the HMWIN development environment

| Item | FP-I4C |
|---|---|
| PLC connection 1 | PLC COM1: RS232C via 16-pin spring force plug; Phoenix contact product: MC 0.5/8-ST-2,5 |
| PLC connection 2 | PLC COM2: RS232C/RS485 via 16-pin spring force plug; Phoenix contact product: MC0.5/8-ST-2,5 |
| Power supply | 24V DC. Connection with the power supply cable (AFPG805) supplied with the unit. |
| 2x Ethernet connection | 10BASE-T / 100BASE-TX autoneg via RJ45 female connector |
| USB 1 | USB 2.0 full speed, 500mA (power supply) |
| USB 2 | USB 2.0 full speed, 100mA (power supply) |
| Protocols and standards | TCP/IP, UDP/IP, DHCP, FTP, FTPS, SSH, http, https, SMTP, ESMTP-Auth, POP3, IEC60870, NTP, Modbus, DynDNS, SNMP, OpenVPN, Cloud service, VNC |
| Flash memory | 2.4GB user/configuration data |
| RAM | 496MB |
| Degree of protection | IP20 |

### FP-I4C: for everything in IIoT that requires remote operation, assistance and alarms

In today's world, users want to be able to instantly connect to, monitor, and operate machines and devices securely, no matter where they are. The FP-I4C gives you full insight into all IoT devices with real-time status alerts and early warnings. Thanks to the data provided, you can react quickly to reduce risks and proactively stop issues before they have a negative effect on your business.



# MINAS A6 series

## Servo drivers

- Fast (max. 6500rpm)
- Powerful
- Compact
- Precise
- The same interfaces, accessories, and flange as MINAS A5 in an even more compact housing
- Even smaller, high-resolution 23-bit encoder that can be used both as an absolute and as an incremental encoder
- Triple-lip oil seal (optional)

| | 200/400V AC | | | | 400V AC |
|---|---|---|---|---|---|
| **MINAS A6 series** | **A6SE** | **A6SG** | **A6SF** | **A6N/A6B** | **A6 Multi** |
| |  |  |  |  |  |
| **Rated power** | 50W–1.5kW (200V AC), 1kW–5kW (400V AC) | | | | 400W–5kW |
| **Supply voltage** | 1/3-phase (200V AC), 3-phase (400V AC) | | | | 3-phase |
| **Bandwidth (velocity response)** | 3200Hz | | | | |
| **Rated rotational speed** | 2000–3000rpm | | | | |
| **Max. rotational speed** | 3000–6500rpm | | | | |
| **Rated torque** | 0.16–15.9Nm (200V AC), 0.64–23.9Nm (400V AC) | | | | |
| **Peak torque** | 0.48–47.7Nm (200V AC), 2.23–71.6Nm (400V AC) | | | | |
| **Control functions** | Position control | | Position, velocity, torque control | | |
| **IP degree of protection (motor)** | IP67 | | | | |
| **Control input** | Pulse | | Pulse, analog | Network | Network |

# MINAS A6 Multi

## 400V servo drive system. Compact, modular design for maximum performance

- Compact servo drive in book format
- Modular construction
- DC link bus system
- Quick servo control technology
- Anti vibration technology
- State-of-the-art network technology
- 18 integrated safety functions
- Configuration via EtherCAT
- Robust rotatable screw connections according to IEC, CENELEC, and IEEE
- Remote control via EoE
- Dual-axis servo driver

### Servo driver units

| Product no. | Size | Number of axes | Rated power |
|---|---|---|---|
| **MADM2A4KBX** | A | 2 | For motors 0.4–0.75kW |
| **MADM2A6KBX** | A | 2 | For motors 0.75–1.5kW |
| **MADM2AAKBX** | A | 2 | For motors 1.5–3.0kW |
| **MBDM1ABKBX** | B | 1 | For motors 3.0–5.0kW |

### Power supply units

| Product no. | Size | Input voltage | Rated power |
|---|---|---|---|
| **MADMPN14** | A | 3-phase 380–480V C | 15kW |

# MINAS A6 series

## Servo motors

- High-precision encoder, 23bit/rev; 8.38 mil. pulses/rev
- Max. rotational speed: 6500rpm
- Low cogging torque
- Even more compact design with new housing (split core structure, encoder even more narrow)
- IP67 rating for all motors with connector
- 50W to 5000W
- Common encoder (usable as an absolute and an incremental encoder)
- Triple-lip oil seal

| | Model | MSMF | | MDMF | | MHMF | |
|---|---|---|---|---|---|---|---|
| | | Low inertia | | Medium inertia | | High inertia | |
| | |  |  |  | |  |  |
| | Rated power W | Flange Ø mm | Rated rotational speed (max.) rpm | Flange Ø mm | Rated rotational speed (max.) rpm | Flange Ø mm | Rated rotational speed (max.) rpm |
| 200V AC | 50 | 38 | 3000 (6000) | – | – | 40 | 3000 (6500) |
| | 100 | | | – | – | | |
| | 200 | 60 | | – | – | 60 | |
| | 400 | | | – | – | | |
| | 750 | 80 | | – | – | 80 | 3000 (6000) |
| | 1000 | 80/100 | 3000 (6000)/3000 (5000) | 130 | 2000 (3000) | 80/130 | 3000 (6000)/2000 (3000) |
| | 1500 | 100 | 3000 (5000) | | | 130 | 2000 (3000) |
| 400V AC | 200 | - | - | - | - | 60 | 3000 (6500) |
| | 400 | - | - | - | - | | |
| | 750 | - | - | - | - | 80 | 3000 (6000) |
| | 1000 | 100 | 3000 (5500) | 130 | 2000 (3500) | 80/130 | 3000 (6000)/2000 (3500) |
| | 1500 | | | | | 130 | 2000 (3500) |
| | 2000 | | | | | 176 | |
| | 3000 | 120 | | | | | |
| | 4000 | 130 | 3000 (5000) | 176 | | | |
| | 5000 | | | | 2000 (3000) | | 2000 (3000) |
| | Features | Low to high power range, low inertia, suitable for all kinds of applications, also suitable for high-speed applications, especially for machinery with high rigidity and repetition rate | | Medium to high power range, medium inertia, suitable for belt-driven machinery with low rigidity | | Low to high power range, high inertia, suitable for belt-driven machinery with low rigidity | |
| | Applications | Equipment for transistor production (like bonders, SMD machinery), packaging machines, machines for food production, etc. | | Conveyor machinery, robots, textile machines, etc. | | Conveyor machinery, robots, machines for LCD production, etc. | |

# MINAS LIQI

## AC servo drivers and motors

- Cost effective
- Reliable and high-performance
- Easy to use
- Excellent price-performance ratio

| Supply voltage | Rated power | Control mode | Torque |
|---|---|---|---|
| 1x200V, 1 x 200V AC | 50–1000W | Position control | 0.16 – 3.2 (Nm) min |

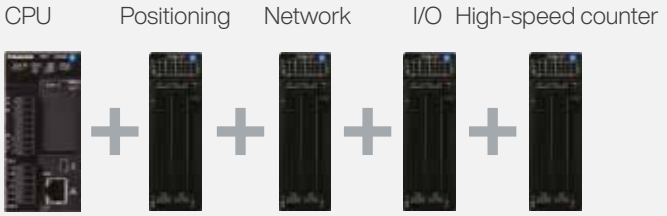
# GM1 series


- Synchronous control for complex multi-axis systems
- EtherCAT type: max. 32 axes
- RTEX type: max. 16 axes
- Two independent Ethernet connectors for e. g. EtherNet/IP, CODESYS protocol, OPC UA, Modbus-TCP
- Slot for SD card (32GB)
- 2 channels for high-speed counter input: 4MHz/8MHz
- 4 channels for PWM output: up to 100kHz
- 16 digital inputs, 16 digital outputs (PNP)
- Up to 15 expansion units possible (max. 992 I/O)
- Communication cycle: 0.5ms
- Easy programming: Configuration software GM Programmer based on CODESYS (compliant with IEC 61131-3)

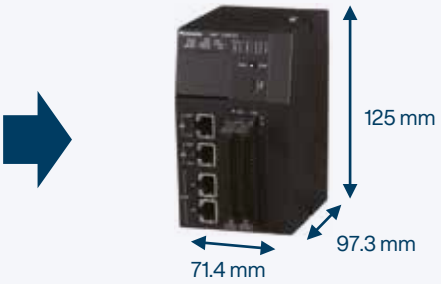
| Product name | Number of axes | Network | Inputs/outputs | High-speed counter | Rated voltage | Specifications Output | Product no. |
|---|---|---|---|---|---|---|---|
| GM1 Controller  | 16 axes | RTEX | 16 inputs 16 outputs | 2 channels | 24V DC | Transistor output (NPN) | AGM1CSRX16T |
| | 32 axes | EtherCAT | | | | Transistor output (PNP) | AGM1CSEC16P |

## The all-in-one unit saves space

Conventional solution

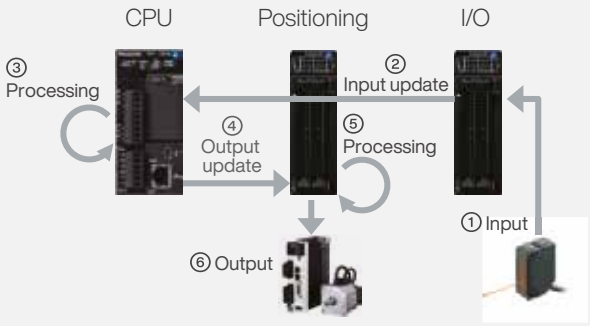



### GM1 - 4 functions in one

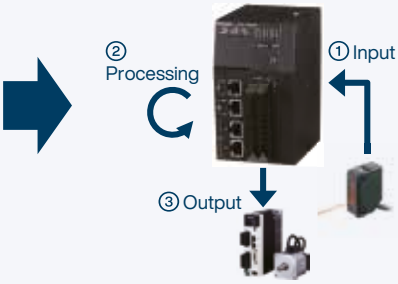



## The all-in-one unit is faster and more accurate

Conventional solution




### GM1 - High-speed processing is possible with fewer steps



## Expansion unit line-up

### Input / output unit

- 64 I/O per expansion unit (up to 15 units)
- NPN/PNP transistor outputs

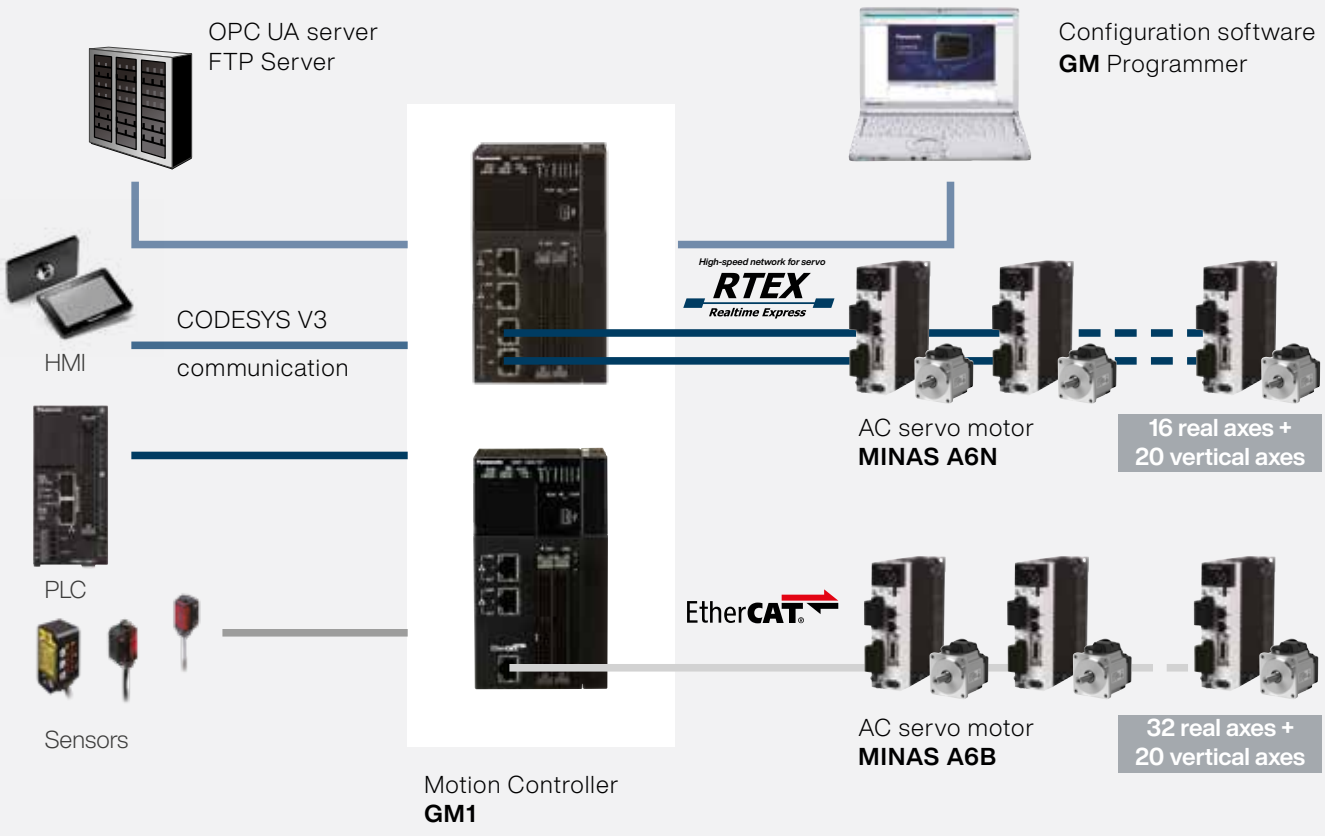
### Analog input / output unit

- Insulation range
  Support various devices with high-speed sampling

### Pulse output unit

- Ultra high-speed positioning control has achieved
- Very low startup speed of 1µs

## System configuration



# FP0H series

## A compact PLC with multiple interfaces

- 2 Ethernet ports as a hub
- Fieldbus communication
- Integrated PWM output
- Built-in-4-axis pulse output
- High processing speed of 10ns per basic instruction (up to 10k steps)
- High program capacity up to 64k steps
- 16 inputs / 16 outputs (transistor)
- Max. 7 expansion units
- Position control with either 2 RTEX positioning units (max. 2 x 8 axes + 4 axes (CPU) or with pulse control (max 4 x 2 axes + 4 axes (CPU)
- SD memory card slot for data recording function and program memory

## Positioning units, suitable for ultra-fast linear servo drives

- Pulse output of up to 4Mpps and fast startup in 5µs
- Ideal for applications with short-stroke actions such as palletizing of electronics parts
- Biuilt-in high-speed counter can detect abnormalities by counting feedback pulses from encoders during positioning

# FP7 series

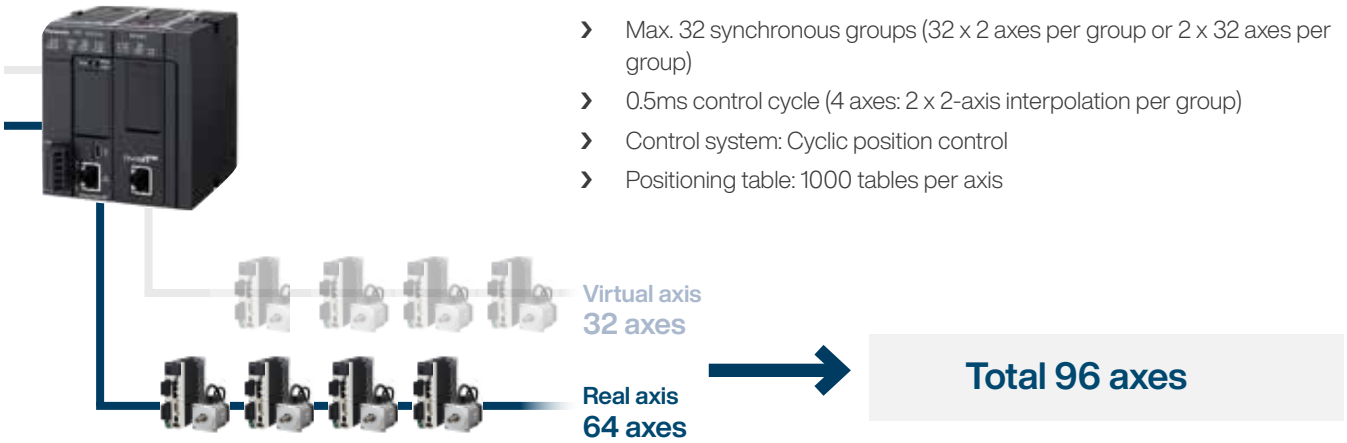
## Modular and limitless connectivity

- Compact size with room for expansion functions
- Interface for communication and application cassettes
- Add-on cassettes can be added to the CPU to increase functionality without increasing the width of the unit. Communication cassettes support communication via RS232C, RS422, and RS485
- Up to 64 units can be connected
- High-capacity SD (SDHC) memory cards of up to 32GB are supported.
- Equipped with a large memory capacity (up to 220k program steps or up to 500k data words) and a high-speed processor (11ns/step)
- GT power supply terminals

## Motion control of up to 64 axes in one unit

A single FP7 motion control unit can control 64 axes of MINAS A6B and 32 virtual axes. Easy to perform multi-axis control.

- Max. 32 synchronous groups (32 x 2 axes per group or 2 x 32 axes per group)
- 0.5ms control cycle (4 axes: 2 x 2-axis interpolation per group)
- Control system: Cyclic position control
- Positioning table: 1000 tables per axis



## Positioning units FP0H (RTEX) – support servo driver MINAS A6N

Capable of performing motion control through a high-speed network and supporting an open network with a small PLC

- **Easy control** of network servos with an ultra-compact PLC.
- **Highly accurate** control of multi-axis position control using high-speed 100Mbit/s communication.
- **Minimization of wiring costs** by using commercially available Ethernet cables.
- **Position control** of 4 or 8 axes for servo drivers with Ethernet (RTEX) interface.
- **Easy configuration** with the software Control Configurator PM instead of complex programming.
- **Precision teaching** supported by manual pulser input

| Product | Number of axes | Output type | Product number |
|---|---|---|---|
| Positioning units FP0H | 4 | RTEX Ethernet | AFP0HMAN |
| | 8 | | AFP0HM8N |

# RTEX

### the multi-axis Ethernet servo system

**Synchronous control**

- 4-axis type: up to six axes including virtual axes (virtual axis: 2 axes)
- 8-axis type: up to eight axes including virtual axes

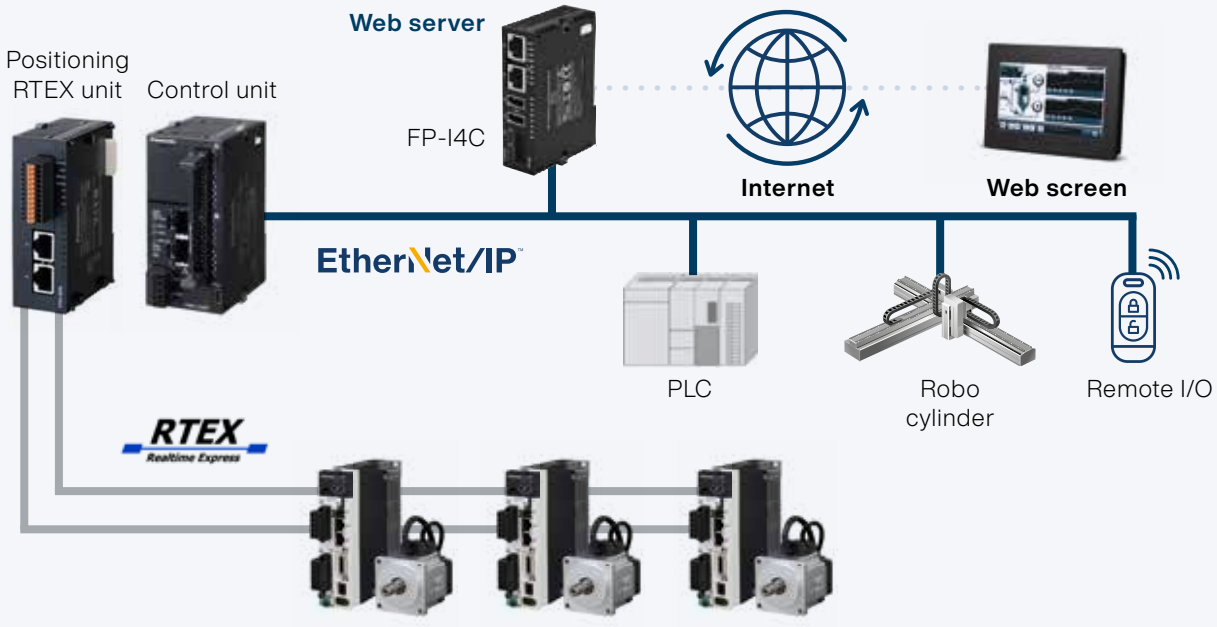
**Multi-axis synchronous control**

- Electronic gear
- Electronic clutch
- Electronic cam

**Interpolation control**

- 2-axis and 3-axis linear interpolation controls
- 2-axis circular interpolation control
- 3-axis spiral interpolation control

### Easy checking of servo drive data on web server



# HM series touch terminals

All terminals are equipped with Ethernet ports and support VNC technology. The web server architecture is based on current HTML5 web technology providing users with advanced control and remote monitoring from any modern browser or from a smartphone, tablet, or computer. The ability to capture, store and share data in higher-level structures makes the HM series the perfect choice for integrating systems across the entire enterprise. The HM series supports Panasonic PLC, SVG graphics, Javascript, OPC UA Server / Client gateway, Modbus TCP (RTU), EtherNet/IP. This makes the HM series a perfect tool for IIoT implementation and Industry 4.0 in a controlled and safety-aware manner.


## HMs700 series – smart & innovative

- PoE (Power over Ethernet)
- Multiude of installation topologies
- Wi-Fi connection
- Internal temperature sensor

## HMx700 series – high-end Multi touch

- Capacitive glass touch panel
- UV resistant, scratch resistant, resistant to chemicals
- Three Ethernet ports
- Display size 5”, 7”, 10.1”, 15.6” and 21.5”

## HMe series – economical

- A top product in its class
- Inexpensive
- Cost-efficient
- Reliable
- Industrial grade

### PoE (HMs700)

**Power over Ethernet**

Maximum connectivity thanks to standard CAT5 wiring

- Only one cable needed (power and Ethernet)
- Up to 100m distance from source

### MQTT (all models)

**Message Queuing Telemetry Transport**

- Designed for connections with remote locations
- Suitable for limited network bandwidth

### Fanless (HMs & HMx)

**Passive cooling**

- Protection against dust, oil and splash water
- Low maintenance
- Noiseless

### OPC UA (all models)

**Standardized communication protocol**

- Platform-independent exchange of machine data

### Wide variation of mountings (HMs700)

**VESA, wall, tube, gooseneck, table stand**

- High flexibility for installation

### Web server architecture (all models)

**Based on the current HTML5 web technology Supports VNC technology**

- Offers many possibilities of remote monitoring and control

### WI-FI (HMs700 except HMs705)

**Wireless Local Area Network**

- Ease of installation and use
- Offer wireless access to employees and customers
- Connection to the wider Internet

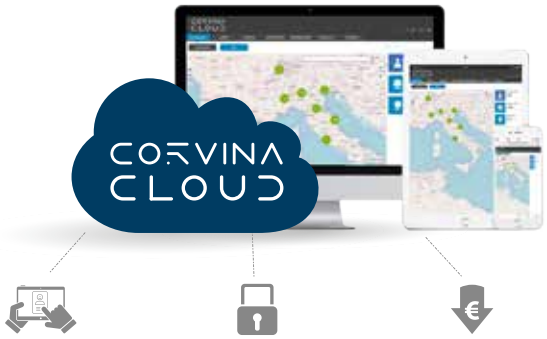
### Full IP67 degree of protection (HMs700)

**The complete encapsulation enables the HMI to be installed under extended environmental conditions.**

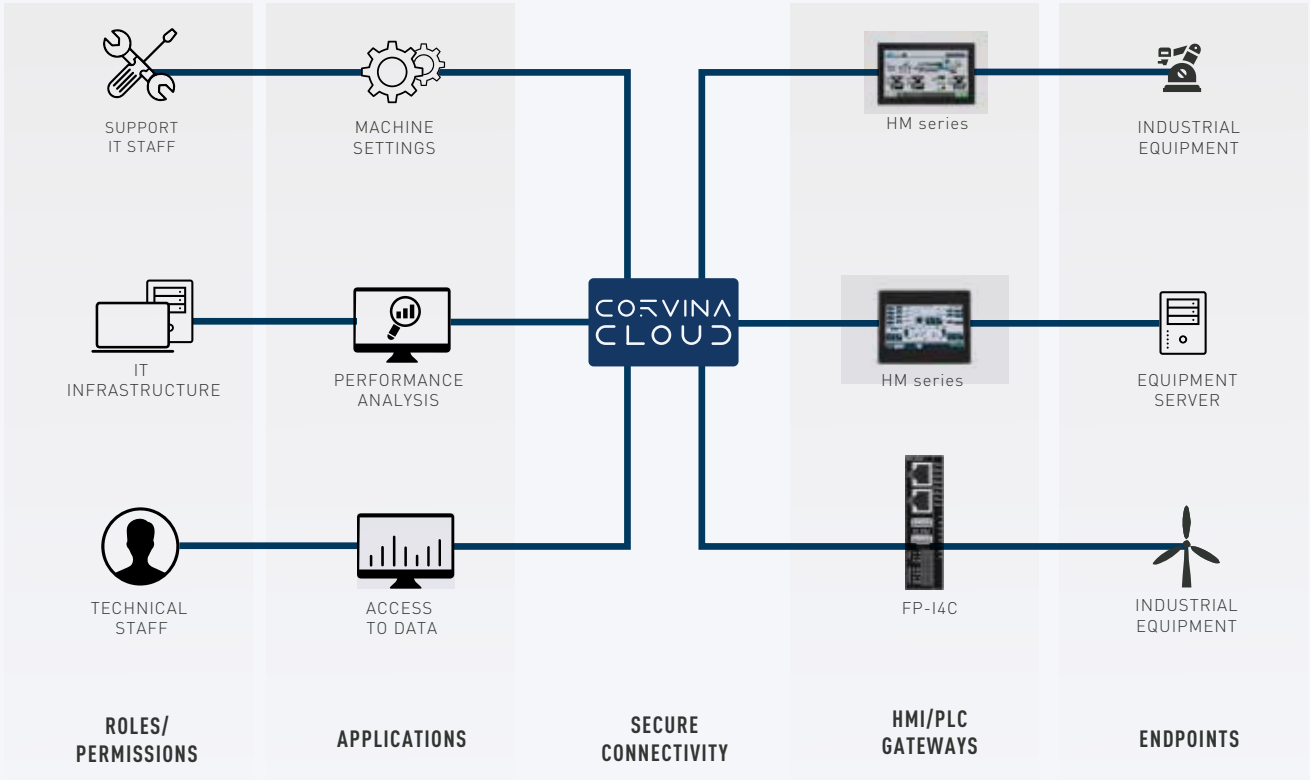
- Ideal for mounting with a swivel arm directly to the machine.
- Cost-efficient

# Cloud solution for the HM series and FP-I4C

Corvina Cloud is a safe cloud solution based on OpenVPN and SSL and allows remote administration of industrial installations. This way, you have a platform making the administration of your IIoT business easy.




## How does Corvina Cloud work?




### Roles & applications

It is possible to define different roles with different user rights. Roles can be given access rights depending on the data needed and the application.

### Secure connectivity

In its core, Corvina Cloud is a high-performance server with the latest open technologies to manage data and control flows, thus acting as a Platform as a Service (PaaS).

### Gateways & endpoints

Our touch panels serve as gateways to the local network (HMe series, HMx700 series, HMs700 series, FP-I4C). They connect to a central server. All Panasonic PLCs, IP cameras, and other devices capable of connecting to the Internet can act as endpoints.

Panasonic
INDUSTRY

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