

Motion Controller GM1

with EtherCAT / RTEX
communication support



Combines programmable logic and motion control in one device for high productivity – efficient and economic

» Synchronous control

Complex multi-axis systems like systems with 2- and 3-axis interpolation

» All in one – motion, network, I/O

- > Less devices
- > Space-saving
- > Easy maintenance
- > Reduction of time and system costs

» Motion program with

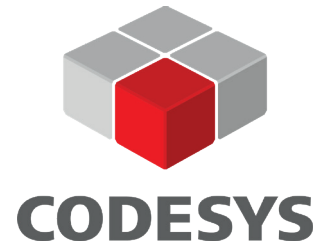
- > Function block guidance
- > Electrical cam editable by GUI
- > Simulation and debug function

» High-speed response

For fast data exchange and networking

» Programming with CODESYS

Standard programming language according to international standard IEC 61131



Equipped with main functions necessary for universal automation machines

Positioning

Torque control

Speed control

» Higher speed and higher accuracy

» For highly dynamic motion and position control



Motion control

Real axes: 32 (EtherCAT type)
Real axes: 16 (RTEX type)

Ethernet: 2 ports

EtherNet/IP* (1 port)
Modbus-TCP
General-purpose communication
FTP server / client
OPC UA server

RS 232C

Modbus-RTU
General-purpose communication

SD memory card

Selectable network



General-purpose I/O: 16 inputs and 16 outputs

NPN/PNP transistor outputs
Expansion unit (64 I/O)
Up to 15 units possible

High-speed counter input: 2 channels

4-fold evaluation by 16MHz
Shortest command cycle: 0.5ms

PWM output: 4 channels

Up to 100kHz

*EtherNet/IP is a trademark of ODVA, Inc.

System configuration



GM Programmer

- > PLC programming
- > Motion programming
- > Various expansion units available



Digital I/O, PWM, High-speed counter



PLC



Various sensors

Motion Controller GM1



EtherCAT



AC servo motor MINAS A6B

Max. 32 axes

* EtherCAT is a registered trademark of patented technology licensed from Beckhoff Automation GmbH in Germany.



High-speed network for servo drives
RTEX
Realtime Express



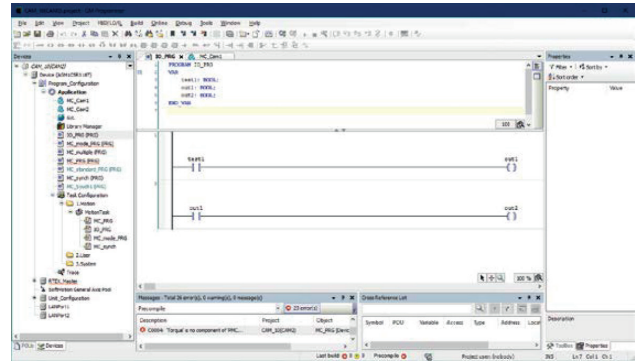
AC servo motor MINAS A6N

Max. 16 axes

* Realtime Express and RTEX are registered trademarks of Panasonic Corporation. Realtime Express is a high-speed and synchronous motion network exclusively developed by our company.

Configuration software

Complies with IEC 61131-3 standard
GM Programmer



6 programming languages

- > LD (Ladder Diagram)
- > FBD (Function Block Diagram)
- > ST (Structured Text)
- > SFC (Sequential Function Chart)
- > CFC (Continuous Function Chart)
- > IL (Instruction List)*

* Selectable by changing the software settings.

Convenient debugging functions

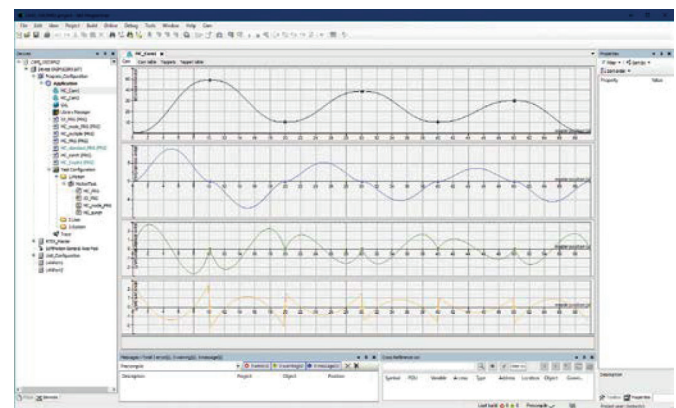
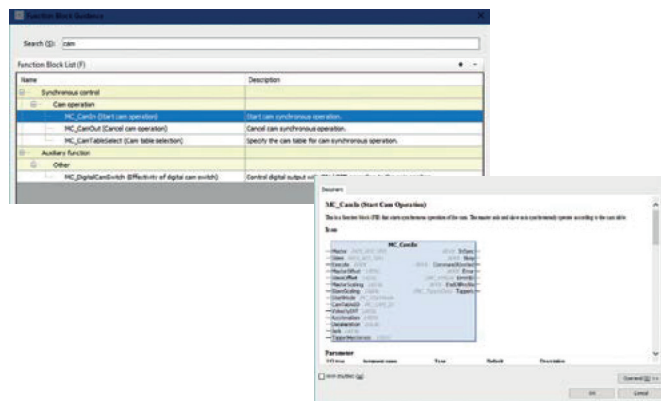
Debugging is made easier by offline simulation of motion tracing, timing adjustment and other functions. This helps to reduce the time and effort needed for designing the system.

Function block guidance

Programming is easy with the help of the pre-installed standard library with function blocks for motion control. Select a function block to see details about its parameters.

Cam editor

Intuitive graphical user interface which allows you to configure the cam curves easily.



Applications



Robots



Machine tools



LCD manufacturing equipment



Automated machinery



Printing machines



Conveyors




Packaging machinery




Semiconductor production equipment

Product types



Controller *1

Product name	Number of axes	Network	Number of I/O	High-speed counter	Rated voltage	Output specifications	Part No.
GM1 controller 	16 axes	RTEX	16 inputs 16 outputs	2 ch	24V DC	Transistor output sink type (NPN)	AGM1CSRX16T
	32 axes	EtherCAT				Transistor output source type (PNP)	AGM1CSEC16P *2


Input / output unit *1

Product name	Type	Number of I/O	Specifications	Part No.
Digital input / output unit 	DC input	64 inputs	24V DC, 32 inputs/1 common	AGM1X64D2
	Transistor output source type (PNP)	64 outputs	Maximum load current: 0.3A (20.4 to 26.4V DC), 30mA (4.75V DC); 3.2A/common, 32 outputs/1 common	AGM1Y64P *2
	DC input Transistor output source type (PNP)	32 inputs 32 outputs	Input: 24V DC, 32 inputs/1 common Output: Maximum load current: 0.3A (20.4 to 26.4V DC), 30mA (4.75V DC); 3.2A/common, 32 outputs/1 common	AGM1XY64D2P *2

Analog input / output unit *1

Product name	Specifications	Number of channels	Part No.
Analog input unit 	Conversion speed 50 μ s / ch Resolution 16bit (maximum) Accuracy max. \pm 0.2% F.S. (at +25°C)	8 ch	AGM1AD8
Analog output unit 	Conversion speed 50 μ s / 4 ch Resolution 16 bit (maximum) Accuracy max. \pm 0.2% F.S. (at +25°C)	4 ch	AGM1DA4

Pulse output unit *1

Product name	Output type	Number of control axes	Speed command	Part No.
Pulse output unit 	Transistor	4 axes	Max. 500kpps	AGM1PG04T
	Line driver		Max. 4Mpps	AGM1PG04L

Accessories

Product name	Part No.
Discrete-wire connector set	AFP2801J
Flat cable connector set	AFP2802J
Spring connector set	<i>Available soon</i>
Power cable	AFP6805J

*1 Connectors are not included with the controller or expansion unit. Please ensure you have the necessary connectors.
The controller is delivered with a power cable.

*2 Excluded from KC marking.



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Panasonic Electric Works

Please contact our Global Sales Companies in:

Europe		
▶ Headquarters	Panasonic Electric Works Europe AG	Caroline-Herschel-Strasse 100, 85521 Ottobrunn, Tel. +49 89 45354-1000, Fax +49 89 45354-1550, www.panasonic-electric-works.com
▶ Austria	Panasonic Industry Austria GmbH	Josef Madersperger Str. 2, 2362 Biedermannsdorf, Tel. +43 (0) 2236-26846, Fax +43 (0) 2236-46133 www.panasonic-electric-works.at
	Panasonic Industrial Devices Materials Europe GmbH	Ennshafenstraße 30, 4470 Enns, Tel. +43 (0) 7223 883, Fax +43 (0) 7223 88333, www.panasonic-electronic-materials.com
▶ Benelux	Panasonic Electric Works Sales Western Europe B.V.	De Rijn 4, 5684 PJ Best, Netherlands, Tel. +31 (0) 499 372727, www.panasonic-electric-works.nl
▶ Czech Republic	Panasonic Electric Works Europe AG, organizační složka	Administrative centre PLATINIUM, Veveří 3163/111, 616 00 Brno, Tel. +420 541 217 001, Fax +420 541 217 101, www.panasonic-electric-works.cz
▶ France	Panasonic Electric Works Sales Western Europe B.V.	Succursale française, 10, rue des petits ruisseaux, 91370 Verrières Le Buisson, Tél. +33 (0) 1 6013 5757, Fax +33 (0) 1 6013 5758, www.panasonic-electric-works.fr
▶ Germany	Panasonic Electric Works Europe AG	Caroline-Herschel-Strasse 100, 85521 Ottobrunn, Tel. +49 89 45354-1000, Fax +49 89 45354-2111, www.panasonic-electric-works.de
▶ Hungary	Panasonic Electric Works Europe AG	Magyarországi Fióktelepe, 1117 Budapest, Aliz utca 4, Tel. +43 (0) 2236 26846 -25, Fax +43 (0) 2236 46133 www.panasonic-electric-works.hu
▶ Ireland	Panasonic Electric Works UK Ltd.	Irish Branch Office, Dublin, Tel. +353 (0) 14600969, Fax +353 (0) 14601131, www.panasonic-electric-works.co.uk
▶ Italy	Panasonic Industry Italia srl	Via del Commercio 3-5 (Z.I. Ferlina), 37012 Bussolengo (VR), Tel. +39 0456752711, Fax +39 0456700444, www.panasonic-electric-works.it
▶ Nordic Countries	Panasonic Electric Works Europe AG	Filial Nordic, Knarrarnäsgatan 15, 164 40 Kista, Sweden, Tel. +46 859476680, Fax +46 859476690, www.panasonic-electric-works.se
▶ Poland	Panasonic Fire & Security Europe AB	Jungmansgatan 12, 21119 Malmö, Tel. +46 40 697 7000, Fax +46 40 697 7099, www.panasonic-fire-security.com
▶ Spain	Panasonic Industry Poland sp. z o.o.	Ul. Dowborczyków 25, 90-019 Łódź, Polska, Tel. +48 42 2309633, www.panasonic-electric-works.pl
▶ Switzerland	Panasonic Industry Iberia S.A.	Barajas Park, San Severo 20, 28042 Madrid, Tel. +34 913293875, Fax +34 913292976, www.panasonic-electric-works.es
▶ United Kingdom	Panasonic Industry Switzerland AG	Grundstrasse 8, 6343 Rotkreuz, Tel. +41 (0) 41 7997050, Fax +41 (0) 41 7997055, www.panasonic-electric-works.ch
	Panasonic Electric Works UK Ltd.	Sunrise Parkway, Linford Wood, Milton Keynes, MK14 6 LF, Tel. +44 (0) 1908 231555, Fax +44 (0) 1908 231599, www.panasonic-electric-works.co.uk
North & South America		
▶ USA	Panasonic Industrial Devices Sales Company of America	Two Riverfront Plaza, 7th Floor, Newark, NJ 07102-5490, Tel. 1-8003-442-112, www.pewa.panasonic.com
Asia Pacific / China / Japan		
▶ China	Panasonic Electric Works Sales (China) Co. Ltd.	Tower C 3rd Floor, Office Park, NO.5 Jinghua South Street, Chaoyang District, Beijing 100020, Tel. +86-10-5925-5988, Fax +86-10-5925-5980
▶ Hong Kong	Panasonic Industrial Devices Sales (HK) Co., Ltd.	Suite 301, 3/F, Chinachem Golden Plaza, 77 Mody Road, TST East, Kowloon, Hong Kong, Tel. +852-2529-3956, Fax +852-2528-6991
▶ Japan	Panasonic Corporation	1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501, Japan, Tel. +81-6-6908-1121, www.panasonic.net
▶ Singapore	Panasonic Industrial Devices Automation Controls Sales Asia Pacific	No.3 Bedok South Road, Singapore 469269, Tel. +65-6299-9181, Fax +65-6390-3953

