

MECHATROLINK News "MMA-FLASH" brings the latest MECHATROLINK information.

Feature Article

An Interview with the General Secretary of the MMA

A Review of the Decade, and Projects for the Coming Decade A Network that Started in Japan is Becoming a Global Standard

The MECHATROLINK MEMBERS ASSOCIATION (MMA) continues to promote the spread of MECHATROLINK, Japan's first open motion network. Thanks to the support of its members, the MMA marks its 10th anniversary this year.

For this issue, we asked Miwa Takuya, the new General Secretary of the MMA, to talk about the history of the MMA from various points of view, and to tell us about development strategies and MECHATROLINK's vision for the coming decade.

Q1. This year marks the 10th anniversary of the establishment of the MMC, which was the first incarnation of the MMA. Could you tell us about changes in the evaluation and position of MECHATROLINK in the open network market?

— When the MMC was established in 2003, some customers were hesitant to change from their existing system to MECHATROLINK because of the limited availability of connectable products and functions, as well as because of unfamiliarity with the network. Additionally, MECHATROLINK was seen as a "private network for promoting members" compared to other networks. Since that time, though, we have continued with promotional activities in a straightforward way. Through these activities, the superior performance, reliability, and easy usability of MECHATROLINK have become widely known, resulting in steady increases in



General Secretary
of the MMA
Takuya Miwa

MMA membership and in the number of complaint products. Beyond this, our quick move to initiate promotional activities overseas accelerated recognition of MECHATROLINK as an open network.

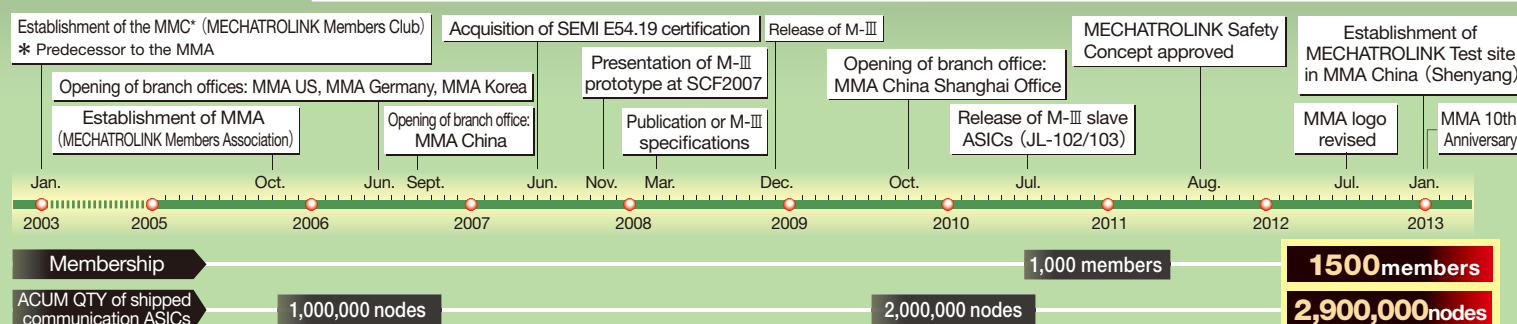
MECHATROLINK has been widely adopted, especially in semiconductor manufacturing post-processing and in systems that require motion control, such as electronic component mounting equipment. MECHATROLINK is now positioned as a highly reliable and high-performance open network from Japan.

Growth of MECHATROLINK in Numbers

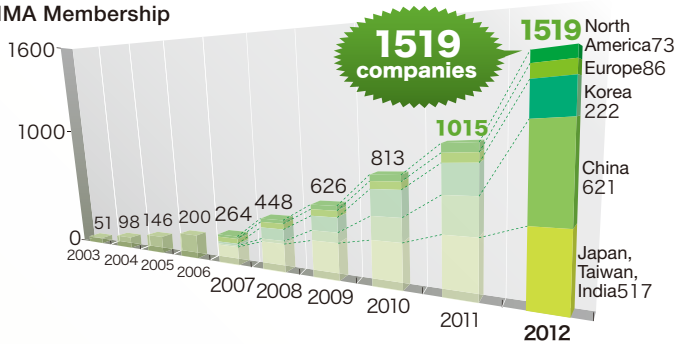
Q2. We will point out the numbers that represents the development results of MECHATROLINK. Could you explain the meaning of each number?

1500 companies — The number of member companies has constantly increased since the establishment in 2003, and is over 1500 companies. We set up the plan in 2010 to promote MECHATROLINK in Asian region centering around China, and have participated in various exhibitions and organized seminars. As a result, the number of member companies in China is the biggest. This shows that the use of MECHATROLINK is spreading in China for the reasons that system networking is booming in China and the demand for high-functionality and high-accuracy of system is increasing in Chinese market. As networking is expected to accelerate in AECAN countries as well, we will expand our promotion activities in these countries.

History of the MMA



MMA Membership

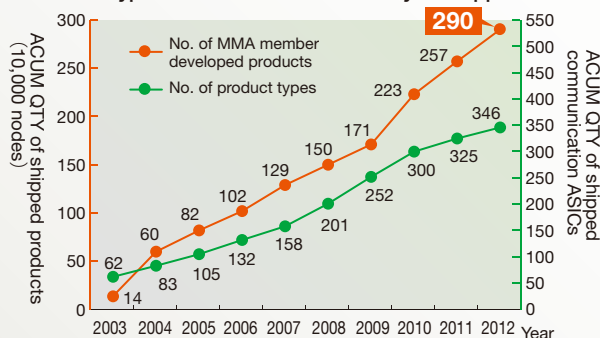


2.9
million
nodes

MECHATROLINK has been adopted for various motion control systems because it guarantees the synchronization that is essential to motion control. Even beyond motion devices, a wide variety of MECHATROLINK compliant products, including I/O devices sold by MMA member companies, can be connected to MECHATROLINK. This allows you to control an entire system using only MECHATROLINK, and gives further advantages in maintainability. In addition, as MECHATROLINK is an open network, you can develop your own product if you can't find an existing product that satisfies your requirements. Providing system-specific function and performance in this way will add value to your product in the market.

As explained above, various vendors and users have adopted MECHATROLINK because of its functionality, performance and flexibility as an open network. More than 2,900,000 nodes of systems that use MECHATROLINK compliant products are operating all over the world, which demonstrates that the MECHATROLINK environment is safe, secured and well established for new users as well as for MMA members.

No. of Product Types and Accumulated Quantity of Shipped Products



100
Mbps

MECHATROLINK started with MECHATROLINK-I (4 Mbps, 15 slaves max.), and has grown to MECHATROLINK-II (10 Mbps, 30 slaves max.) and eventually MECHATROLINK-III (100 Mbps, 62 slaves max.).

Throughout this development process, MECHATROLINK has responded to the requirements for various control methods and to the need for faster transmission speeds and increased numbers of connectable slaves. MECHATROLINK-I supported only position control commands. Later on, speed and torque control commands were added for MECHATROLINK-II and -III, realizing position, speed, and torque control from a host controller via MECHATROLINK, and widening the applicable system range. Furthermore, MECHATROLINK-III supports message communications, which improve system maintainability.

Q3. Could you tell us about your project of MECHATROLINK promotion activities for a fresh start of the MMA?

MECHATROLINK Communications Specifications

Function Specification	MECHATROLINK-II	MECHATROLINK-III
Physical Layer	Equivalent to RS-485	Ethernet
Baud Rate	10 Mbps	100 Mbps
Transmission Cycle Time	250 μ s to 8 ms	31.25 μ s to 64 ms
String Size	17 bytes or 32 bytes (Both string sizes cannot be used at the same time)	8/16/32/48/64 bytes
Number of Slaves	30 max.	62 max.
Max. Transmission Distance	50 m total (100 m with repeater)	100 m between stations
Min. Distance between Stations	50 cm	20 cm
Topology	Bus	Cascade or star
Cyclic/Event-Driven Communications	Cyclic communications only	Cyclic and event-driven communications
Retry Function	7 stations max. (1 time/station)	62 stations max. (n times/station)
Message Communications	Not available	Available
Multi-Slave Function	Not available	Available

— Marking the 10th anniversary of the MMA and over 1500 member companies as a turning point, we will promote the use of MECHATROLINK globally by highlighting its superior performance and reliability. In particular, we will strengthen promotional activities, including sales promotions, in China and the ASEAN region, where market growth and the demand for high performance systems are expected to increase, to make MECHATROLINK a de facto standard in Asia. To achieve these project goals, we have been working on various local standards, as well as on acquisition of IEC certification. We also want to emphasize MECHATROLINK benefits as something that users can actually enjoy, instead of simply explaining the performance and functions of the network itself, as we have. We believe this is the answer that users expect when asking whether MECHATROLINK is really useful for their system, and about what solutions, including cost, performance, and reliability, MECHATROLINK can offer. It is also, we believe, one of the ways that MECHATROLINK can prevail in a market filled with competitors.

Development through Strengthened Connections

Q4. Could you tell us about your ideas as to which direction MECHATROLINK should take over the next decade?

— We will, of course, further improve performance. But we will also offer an extensively safe, easy-to-use and effective network during the coming 10 years. Technological innovation and extensive services will be the key points covered by MECHATROLINK products that have active roles in market.

It has also become increasingly important to protect network systems from the dangers of attacks such as hacking and cyber-terrorism. We will investigate countermeasures to protect the control system from these dangers, not only by using closed connections between the MMA and its members, but also by cooperating with other industry groups such as the VEC and relevant administrative organizations.

Q5. Do you have a message you would like to relay to MMA members and MECHATROLINK users?

— We thank you for having adopted MECHATROLINK and for your support.

We believe that it is our mission to connect devices, companies, and people through MECHATROLINK. Maintaining strong connections with our members, we at the MMA will also conduct promotional activities to expand the use of MECHATROLINK. We are looking forward to the further development of MECHATROLINK, and toward a global standard for open field networks.

Messages from Board Committee Companies

Digital Electronics Corporation Corporate Coordinate

Masashi Murakami



Congratulations on the 10th anniversary of the MMA! We welcome the 10th anniversary of the MMA, a standardization association born in Japan, and one that has actively developed activities not only in Japan but also all over Asia, including China, Southeast Asia, and India. We sincerely appreciate, as a board committee company, the extensive efforts of the staff of the MMA secretariat and MMA members.

The age that demands only technology by which products are produced is nearing its end, and differentiated solutions that use problem-solving technologies are increasingly needed.

We offer solutions that anticipate market demands, such as for miniaturization that has been implemented by energy-saving techniques, for the motion business. We believe that miniaturization and easy, but still intelligent, tuning will see increasing demand in the motion control market.

For these reasons, we believe the MMA has the mandate to continue as the standardization association the world market is looking for. Let's go forward together toward the 20th anniversary.

YASKAWA INFORMATION SYSTEMS Corporation YEC Solution Division Embedded Technology Dept. Manager

Koji Oohata



We congratulate the MMA on its 10th anniversary.

YASKAWA INFORMATION SYSTEMS joined the

MMA as a board committee company when the MMA was established. Since then, we have engaged in various activities involving embedded software development together with the MMA. Recently, we became a member of the MMA PC Engineering group, and are engaged in activities to offer PC-based MECHATROLINK solutions that meet current demand.

Recent economic growth in Southeast Asia is remarkable, and globalization is rapidly advancing. Selection of a field network is key to expansion of the FA systems that we work with. We expect to see many new MMA members and the spread of MECHATROLINK in Southeast Asia.

We will use the key of the PC motion library to increase new business in cooperation with the MMA and its member companies.

News & Topics

2013 MECHATROLINK Members Association General Meeting, Lectures, and Reception

The 2013 MMA general meeting will be held as shown below. The meeting will be followed by lectures a reception. The meeting, lectures, and reception are free to all MMA members. All participants are requested to register in advance on the following MMA website. We are looking forward to seeing many MMA members at the meeting.

<http://www.mechatrolink.org/jp/>

2013 MECHATROLINK Members Association General Meeting, Lectures, and Reception



2012 MECHATROLINK Members Association General Meeting

Date	From 13:00 to 18:50 on June 13 (Thurs) , 2013
Place	UDX Conference 6th Floor <ul style="list-style-type: none"> Address : 4-14-1 Sotokanda, Chiyoda-ku, Tokyo Access : 2-minute walk from JR Akihabara station 3-minute walk from Tokyo Metro Ginza Line Suehirocho station/Tsukuba Express Akihabara station 4-minute walk from Tokyo Metro Hibiya Line Akihabara station Visit the following URL for the access map. http://udx.jp/conference/access.html

Participants	MMA members only
Programme	<ul style="list-style-type: none"> Report on FY2012 activities and activity plan for FY2013 Report on settlement of accounts for FY2012 and budget planning for FY2013 Report on group activities (Marketing and PC Engineering groups) Key lecture by Hiroyuki Ao, Manager of Technology Planning, Electronics Assembly Equipment Division, FUJI MACHINE MFG. CO., LTD. 10th anniversary special lecture by Akira Fukuzawa, freelance announcer Introduction of new products Commendation ceremony Reception

Exhibition & Event Information

Industry Open Net Exhibition 2013

Event Information

- Dates: July 9 (Tues), 2013 in Osaka, July 11 (Thurs), 2013 in Tokyo
- Place: [Osaka] Osaka Grand Cube 10F conference room (5-3-51, Nakanoshima, Kita-ku, Osaka)
[Tokyo] Curian 7F event hall (5-18-1, Higashioi, Sinagawa-ku, Tokyo)
- Organizer: Industry Open Net Exhibition Preparatory Committee

To attend this exhibition, complete the online application form at: <http://www.tjgr.jp/opnet2013>

Report of Exhibitions and Seminars

aimex – AUTOMATION WORLD 2013

The MMA participated in AIMEX – AUTOMATION WORLD 2013 held in Seoul, Korea, from Mar. 13 (Wed.) to 16 (Sat.), 2013.

A panel that showed an entire system using the MECHATROLINK network with products from MMA corporate members and displays of products from individual MMA corporate members attracted many visitors just like at other exhibitions.

A MECHATROLINK seminar was also organized during the exhibition, at which the participants learned the merits of MECHATROLINK. Further spread of the use of MECHATROLINK can be expected in Korea.



MMA booth

MTA2013

The MMA participated in MTA2013 held in Singapore, from Apr. 9 (Tues) to 12 (Fri), 2013.

The MTA2013 received not only domestic visitors but also many visitors from Southeast Asian countries such as Indonesia and Malaysia, and many Japanese, European, and American companies participated in the exhibition.

It was impressive to see many visitors who stopped in front of the panels that showed entire systems of MECHATROLINK-II and MECHATROLINK-III at the MMA booth. Those visitors asked for information on MECHATROLINK, and some of them newly joined the MMA.

The MMA will continue promoting the use of MECHATROLINK.



MMA booth

CIMT2013 – The 13th China International Machine Tool Show

The MMA participated in the 13th China International Machine Tool Show (CIMT2013) held in Beijing, from April 22 (Mon) - 27 (Sat), 2013. The total exhibit area was 126,000 m², which is the largest among CIMT past exhibitions. Such wide exhibit area shows that the machine tool market in China is watched by all the world with keen interest.

It's the first time for the MMA to independently participate in this exhibition. With collaboration of 10 local MMA member companies of CNC manufacturer, the MMA demonstrated their MECHATROLINK compliant products at the MMA booth. The MMA booth received many visitors including CNC manufacturers and machine tool end users during the exhibition. We promoted latest MECHATROLINK compliant products and technologies of each participated member company, which, we believe, leads to further expansion of MECHATROLINK in machine tool market in China. Thereby, about 50 companies newly joined the MMA during the exhibition period.

The MMA will continue to actively promote the use of MECHATROLINK in China, by participating in exhibitions and organizing seminars.



MMA booth

MECHATROLINK Seminar 2013 in Taiwan

The MMA organized a MECHATROLINK seminar 2013 at Splendor Taichung Hotel in Taiwan, on March 8 (Fri), 2013. More than 90 participants attended and this included MMA member companies, MECHATROLINK users, and many companies who are interested in use of MECHATROLINK in Taiwan.

The seminar included a general introduction of MECHATROLINK and detailed explanations of the technology, development, and merits of high-speed communication MECHATROLINK-III. Additionally, 3 member companies gave technical lectures and 7 member companies demonstrated their MECHATROLINK-compliant products. The staffs of member companies were busy answering questions of the participants. The seminar ended in great success as well as the seminars in other countries.

We will continue actively promoting MECHATROLINK in Taiwan.



Seminar

New MECHATROLINK Products

YE DATA INC. "RCPC-M3 Controller"

Features

- **Integrates the ultra-high-speed performance of the galvano scanner to external axis motion, such as a stage, through MECHATROLINK-III.**
Realizes control in full synchronization between the galvano scanner system (used for ultra-high-speed laser machining processes, such as marking, thin-film scribing, and trimming for electronics components) and an external axis such as a X-Y stage.
Realizes ultra-high-speed machining on the full surface of a workpiece, using a galvano scanner while moving the X-Y stage.
- **Genius laser control functions**
Controls laser ON/OFF timing in synchronization with the galvano scanner motion.
Analog control, frequency control, and PWM control are equipped to support various lasers of different power.
- **3D control realizes a high-speed three-dimensional laser machining**
Laser focus position can be controlled in three dimensions by moving up to 3 axes of the galvano scanners.



Inquiries

YE DATA INC.

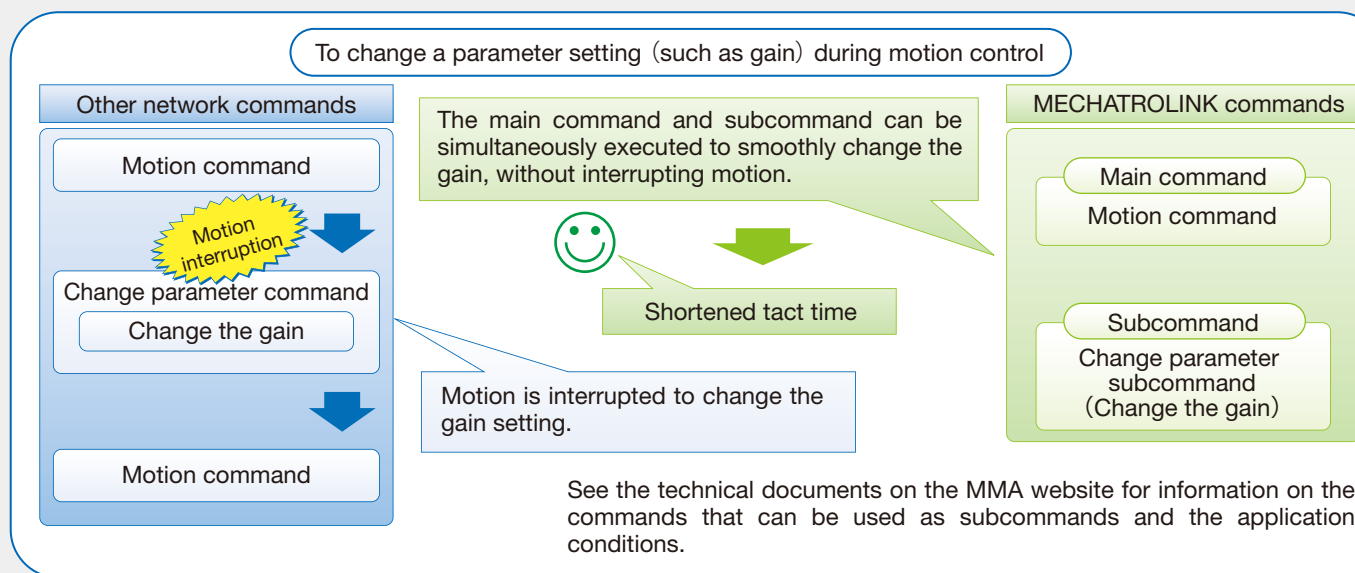
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Column

MECHATROLINK Subcommands

MECHATROLINK supports subcommands. When using a subcommand, another command can be specified for the subcommand (separately from the main command). In other words, two different commands can be executed at the same time. For example, a parameter setting such as gain can be changed by using a subcommand while the main command controls

motion. In general, the command and subcommand need to be sequentially switched to change the parameter setting, e.g., Move command → Change Parameter → Move command (restart motion). However, the use of a subcommand eliminates the need to interrupt motion control, so tact time can be reduced.



Editor's Comment

This year brings us to a fresh start for the MMA's second decade. We wish to express our appreciation to all MMA member companies on this occasion of our 10th anniversary. To commemorate the 10th anniversary, we created a special MMA logo. You can expect to find this special logo in various settings. The MMA annual general meeting is scheduled for next month. We are looking forward to seeing many MMA members there.
Written by Hiranuma

Inquiries

For questions about joining MECHATROLINK Members Association and other inquiries, please contact the MMA.

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