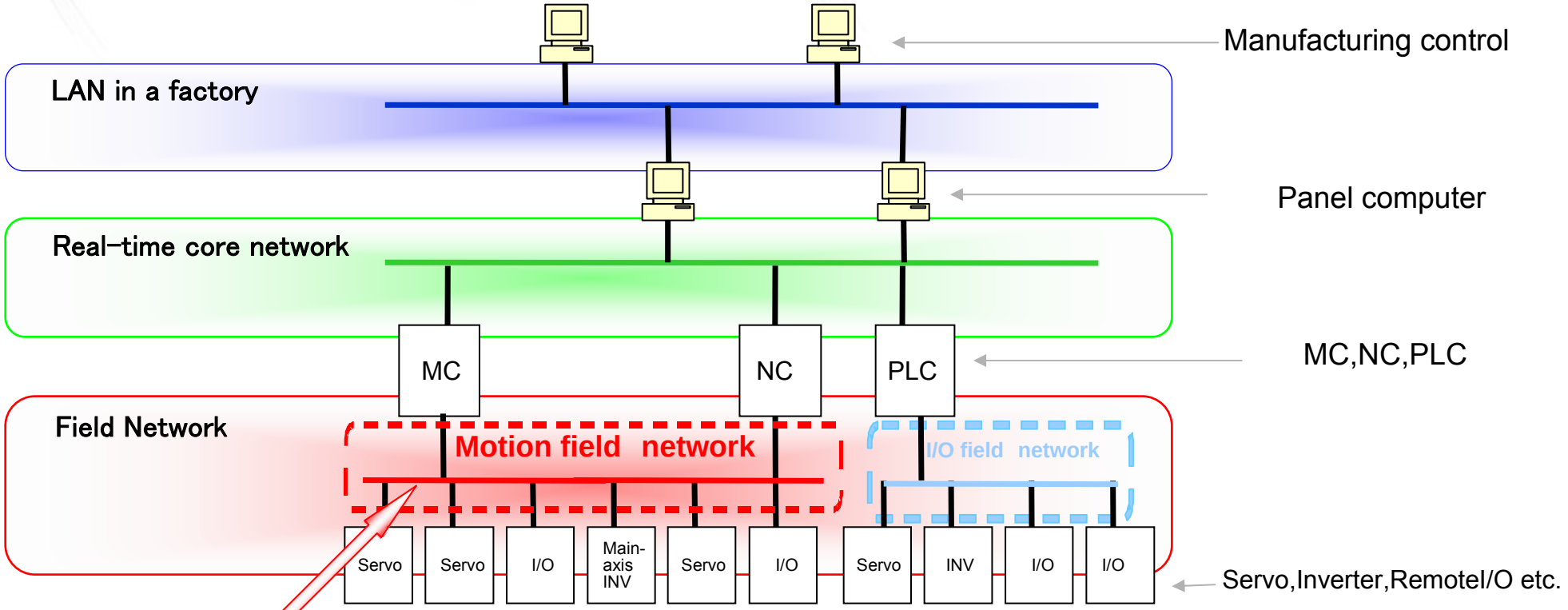
Introduction of

MECHATROLINK

MECHATROLINK Specifications

Position of MECHATROLINK



MECHATROLINK!

MECHATROLINK Specifications

The field network is classified into two according to demanded function and performance.

Motion Field network	I/O Field network
Motion Field Network focuses on precise synchronous control and rapid response between servos. Example MECHATROLINK,SERCOS	I/O Field Network focuses on connecting various I/O devices rather than synchronization. Example DeviceNet,Profibus-DP,CC-LINK

MECHATROLINK Specifications

Function Specification	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Physical Layer	Equivalent to RS-485	Ethernet
Baud Rate	10Mbps	100Mbps
Transmission Cycle Time	250μs ～ 8ms	31.25μs ～ 64ms
Data Size	17 bytes or 32 bytes (Both data sizes cannot be used in the same network.)	8/16/32/48/64bytes (Different data sizes can be used in the same network)
Number of Slaves	30 max.	62 max.
Maximum Transmission Distance	50m total(100m with Repeater)	100m between stations 0.5m
Minimum Distance between Stations	0.5m	0.2m
Topology	Bus	Cascade, Star or Point-to-Point
Cyclic/Event-driven Communications	Cyclic Communications possible	Cyclic and event-driven communications supported.
Retry function	Max 7 stations(1 time per 1 station)	Max 62 stations(n time per 1 station)
Message Communications	None	Available

Introduction

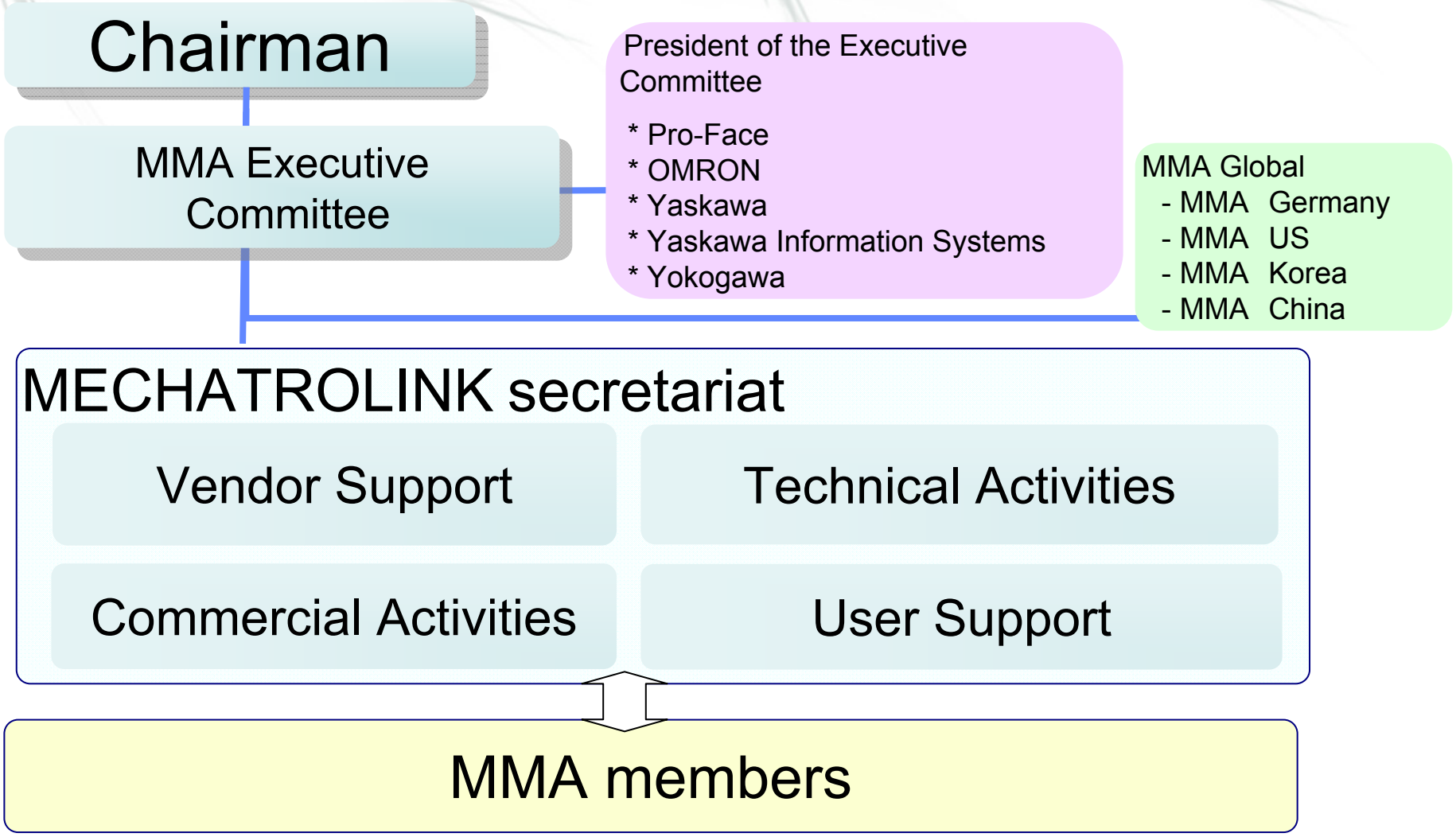
Name : MECHATROLINK Members Association (MMA)

Objectives: MMA is a group of MECHATROLINK product developers and users who promote the use of MECHATROLINK, a motion field network. All members support the construction and promotion of a larger MECHATROLINK family.

Main Office : 480 Kamisujisawa, Iruma, Saitama, Japan

Telephone: +81-42-962-7920
Fax: +81-4-2962-5913
e-mail : mma@mechatrolink.org
URL : http://www.mechatrolink.org

MMA Organization



Membership Categories and Privileges

■MECHATROLINK Members Association Membership

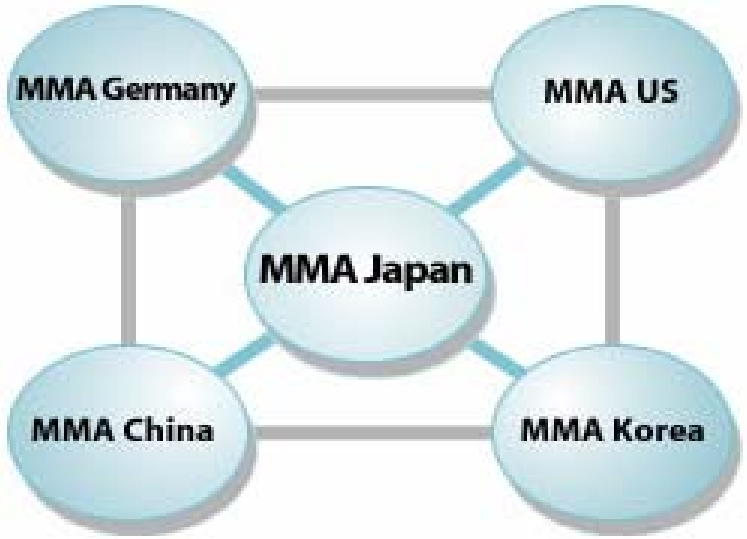
	Membership Categories			
	Board Members	Executive Members	Regular Members	Registered Members
Admission fee	Free			
Annual fee (April to March)	500,000 yen *	200,000 yen *	100,000 yen *	Free
Annual fee for members admitted between October and March of the then-current term	1/2 of the above annual fee			Free
Participation in committee and general meetings	Authorized to participate the executive committee, subcommittee, and general meeting	Authorized to participate the subcommittee and general meeting		Not authorized
Services				
Downloading the technical documents from the Website	Free			
Direct mails from the Association	Free			
Seminars	Charged			
Product presentation at seminar	Authorized		Not authorized	
Technical inquiries (by e-mail or telephone.)	Free			Not authorized
Development support for vendors	Free (charged for some cases)			Not authorized
Introduction of products on the Association's website	Free			Not authorized
Advertisement on the Association's website	Free	Charged		Not authorized
Compliance certification test	50,000 yen *	100,000 yen *	200,000 yen *	-
Rights of Members				
Development and sale of products	Authorized			Not authorized
Participation in formulation of specifications	Authorized	Not authorized(Possible to receive the information on experimental specifications).	Not authorized (Possible to receive the information on experimental specifications.)	Not authorized (Possible to read the formulated specifications)
Acquisition of development ASIC	Possible to obtain ES and CS	Possible to obtain CS	Mass production	-

Benefits of MMA Membership

- Issue ID and Password for WEB member site
- Getting MECHATROLINK specifications
- Up-to-date with the latest information by mail magazine and News
- Technical support for product development
- Promotion assistance for MECHATROLINK compliant products
- Participation for the MECHATROLINK booth at tradeshows
- Product certification test
- Be able to purchase connector kit and assemble cables
- Participation for the MECHATROLINK meeting (once a year)
- Participation for the MECHATROLINK development seminar

MMA Worldwide support

Technical support is available overseas



Contact Information

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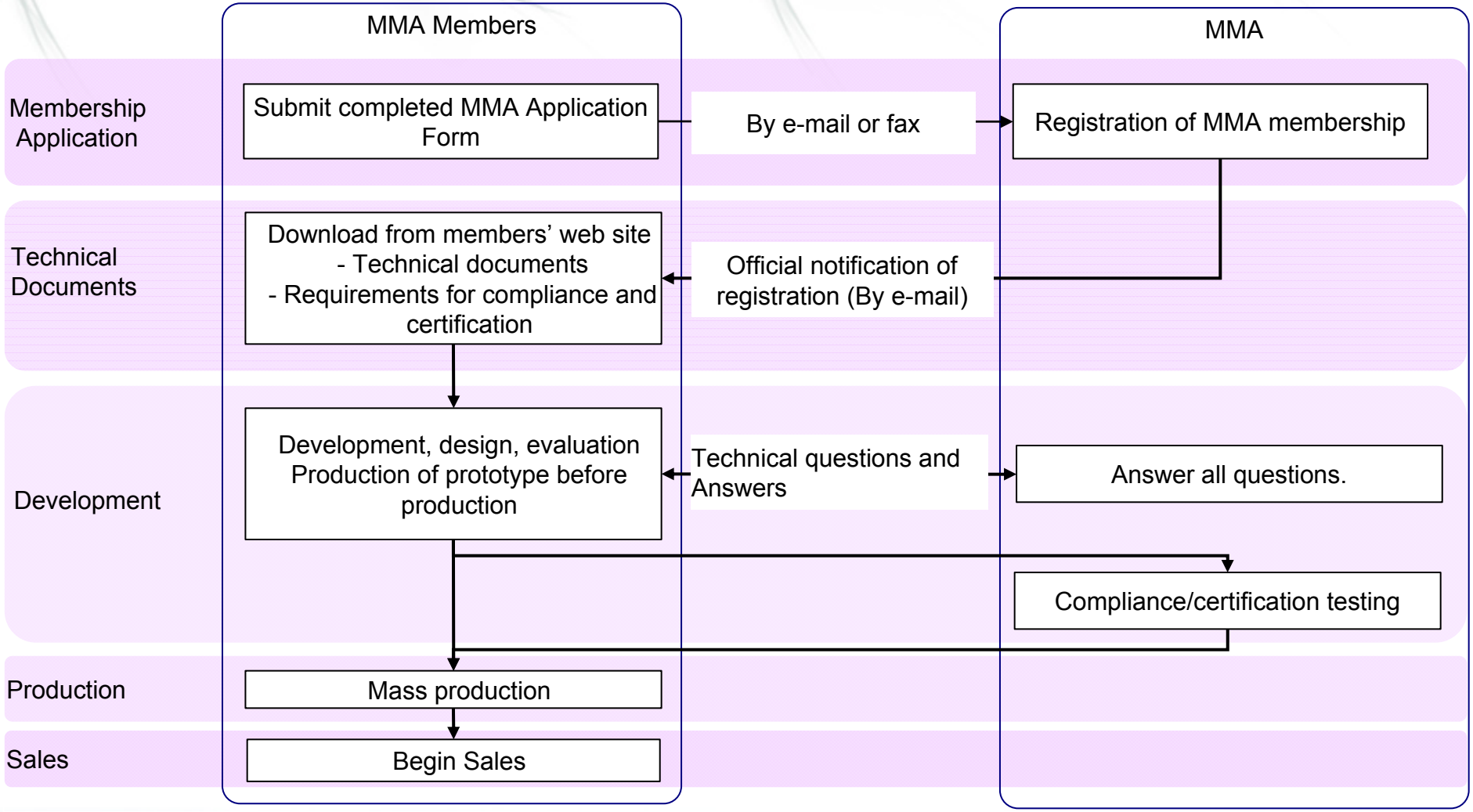
No.16, East Nanping Road, Hunnan High-tech. Industrial Development Zone, Shenyang, 110171, P.R. China
Tel : ++86-24-24696008
e-mail : mma-cn@mechatrolink.org

From Membership to Product Release



Compliance and Certification Testing

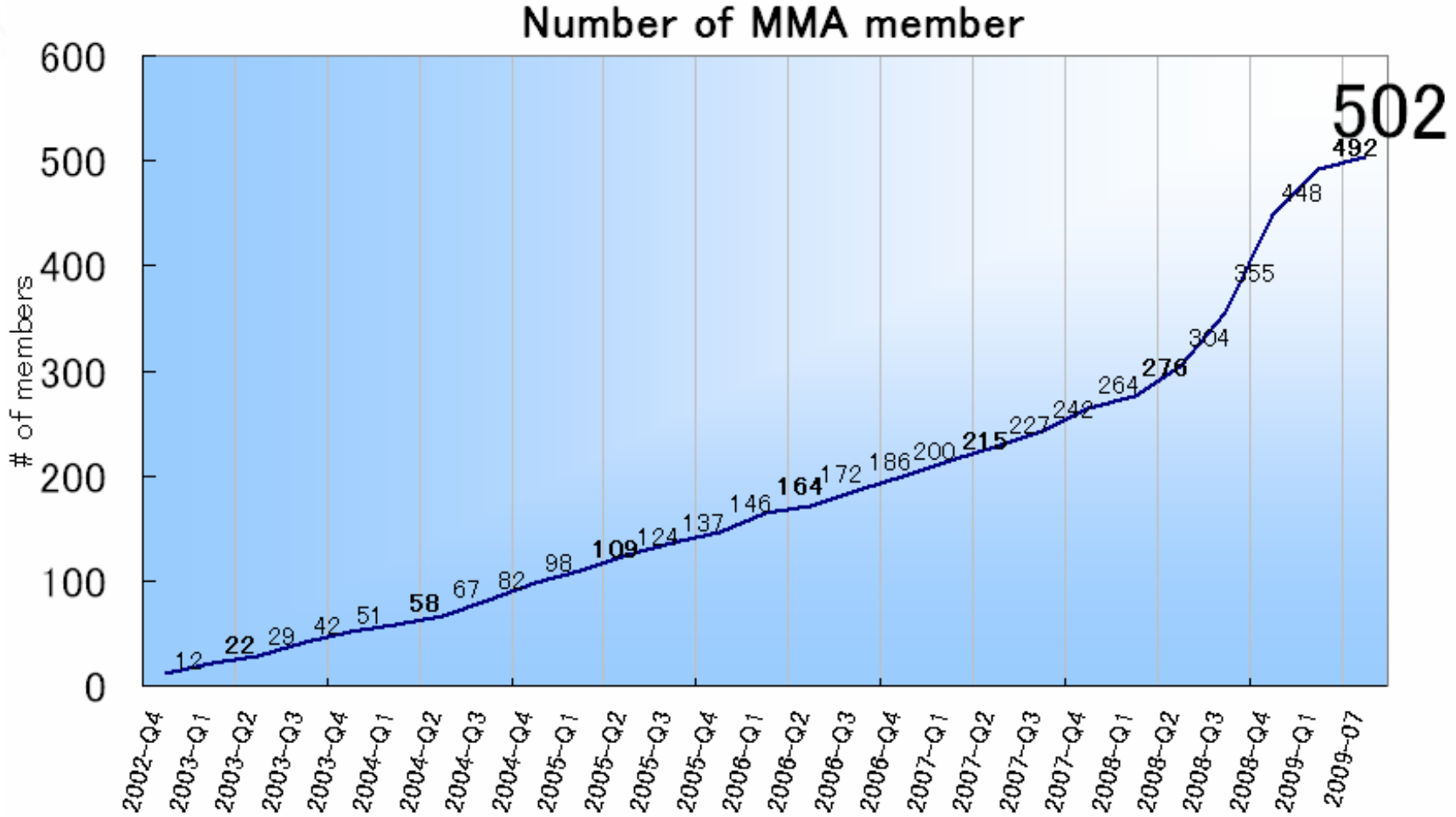
- Compliance and certification testing is carried out to see if products meet MECHATROLINK specifications. If test results are satisfactory, the MMA grants the use of the MECHATROLINK logo on the product.
- Cost of testing product: $1,800 (Executive:$900, Board: $450)
- Time required for testing: Will vary in accordance with the product specifications, such as the number of applicable commands. For more information, contact the MMA secretariat.

Compliance testing is not compulsory, but, it is recommended.

Rapidly Growing MMA

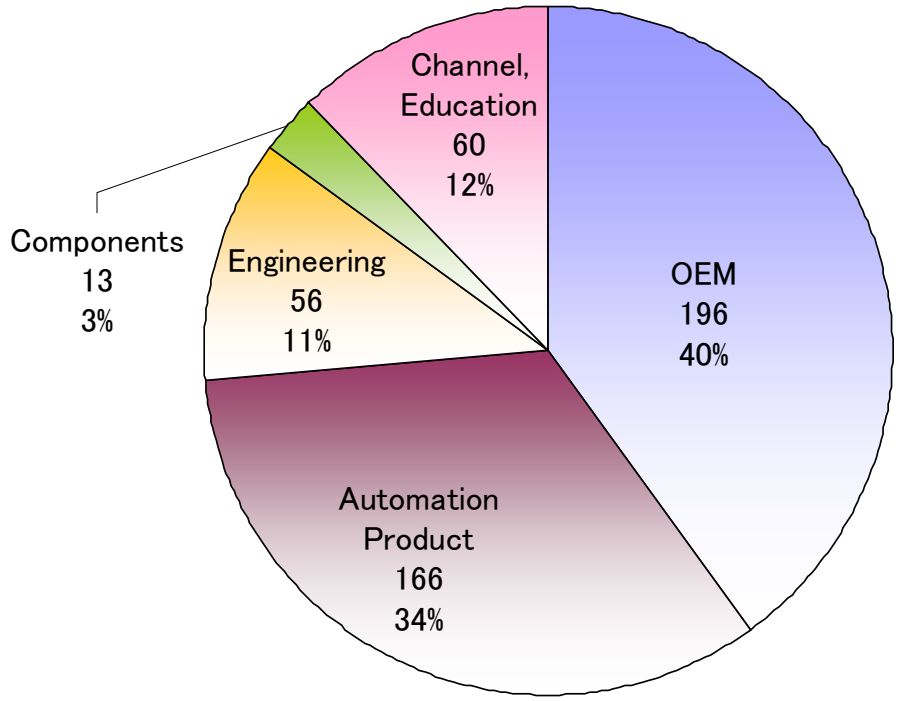
MECHATROLINK

502 members (as of July 2009)

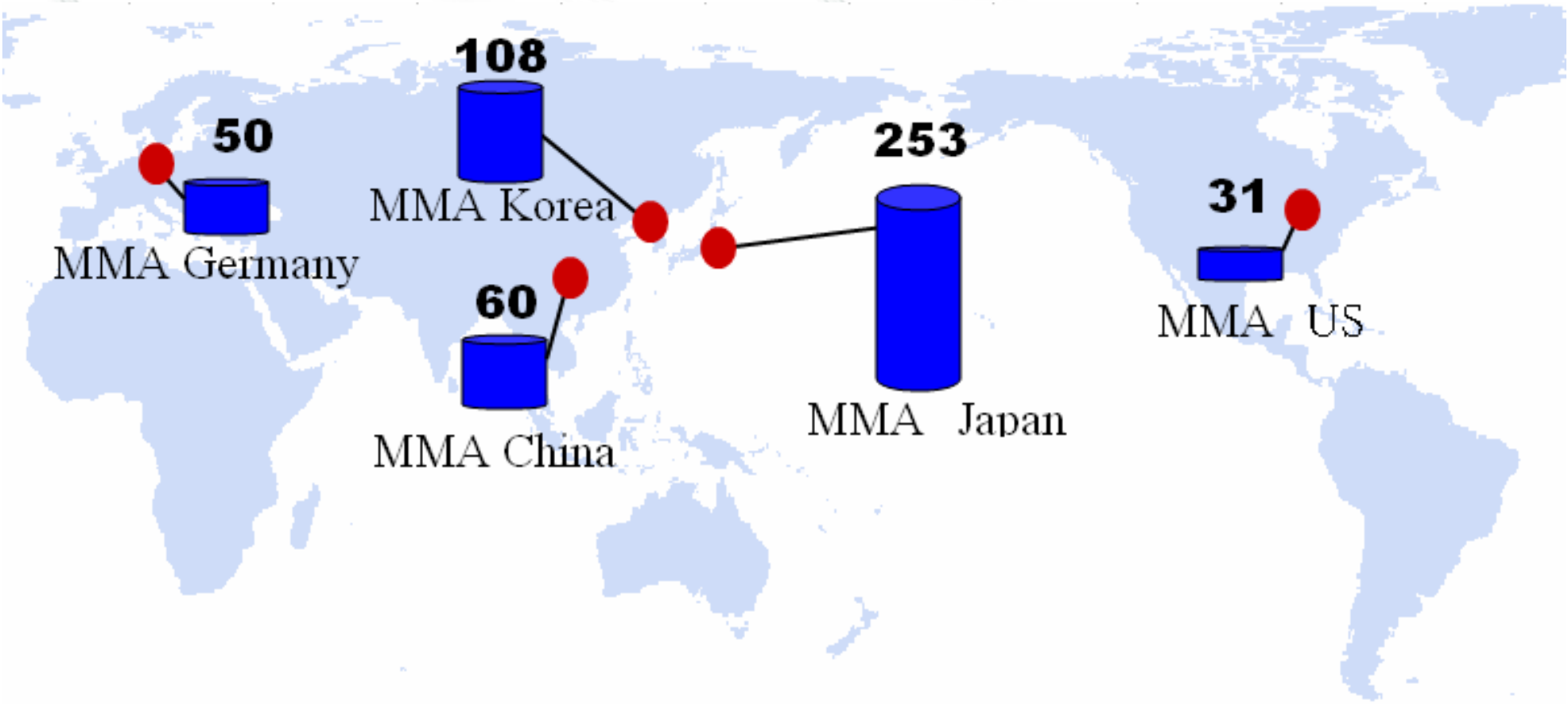


Type of MMA member

Total number of Original Equipment Maker and Automation Product Maker is more than 70%.



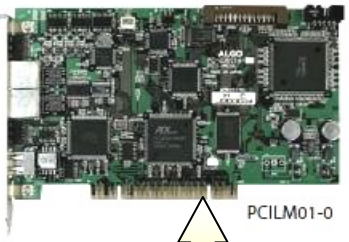
MMA Worldwide



MECHATROLINK Master Products

MECHATROLINK

Network Card



Motion Card

CNC

Panel type

PLC

Motion Controller

MECHATROLINK Slave Products

Servos

Stepping motors

Vision system

Temperature control

Inverters

IOs

Slider axis

Obtaining Information

- Website open to the public
  - MECHATROLINK communication
  - MECHATROLINK Members Association (Download the membership agreement and the application form.)
  - Member List (Only members who have given permission for their contact information to be published.)
  - List of MECHATROLINK products

    URL：http://www.mechatrolink.org

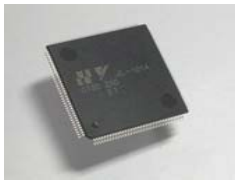
- Website for members only
  - Technical Information (Members can download the latest technical documents.)
  - Compliance Certification Test (Members can download information about the application procedure and certification requirements for MECHATROLINK compliance.)
  - Inquiries (Members can read the Q & A list and send a question.)
  - News and Events

    URL：http://www.mechatrolink.org

    and go to the member's page

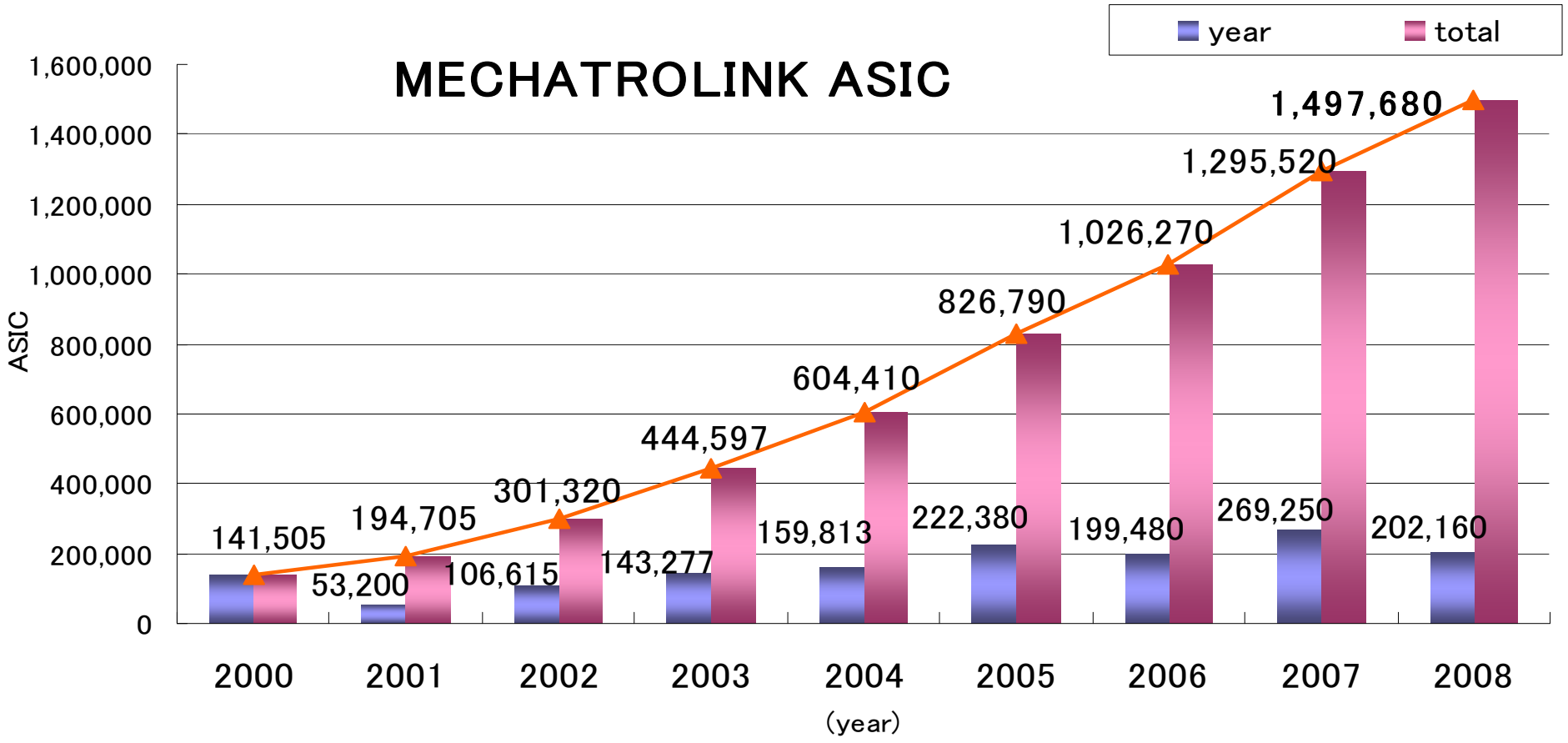
ASIC and Interface Card

MECHATROLINK

Communication ASIC JL-100/JL-101 JL-080B/JL-098B JL-052C	•MECHATROLINK-III Master and slave JL-100(FBGA)/JL-101(LQFP) •MECHATROLINK-II Master and slave JL-080B(5V) Master JL-098B(3.3V) Slave JL-052C(3.3V)	 
PCI communication card JAPMC-NT110 JAPMC-NT112A	•For master development Communication interface card using JL-080/JL-101(without CPU) •Support OS –Windows2000/XP+RTX5.1.1 or RTX6.0.1 –Windows2000/XP	JAPMC-NT110  JAPMC-NT112A 
PC/104 communication card JAPMC-NT115	•For master development Communication interface card using JL-080(without CPU)	JAPMC-NT115 

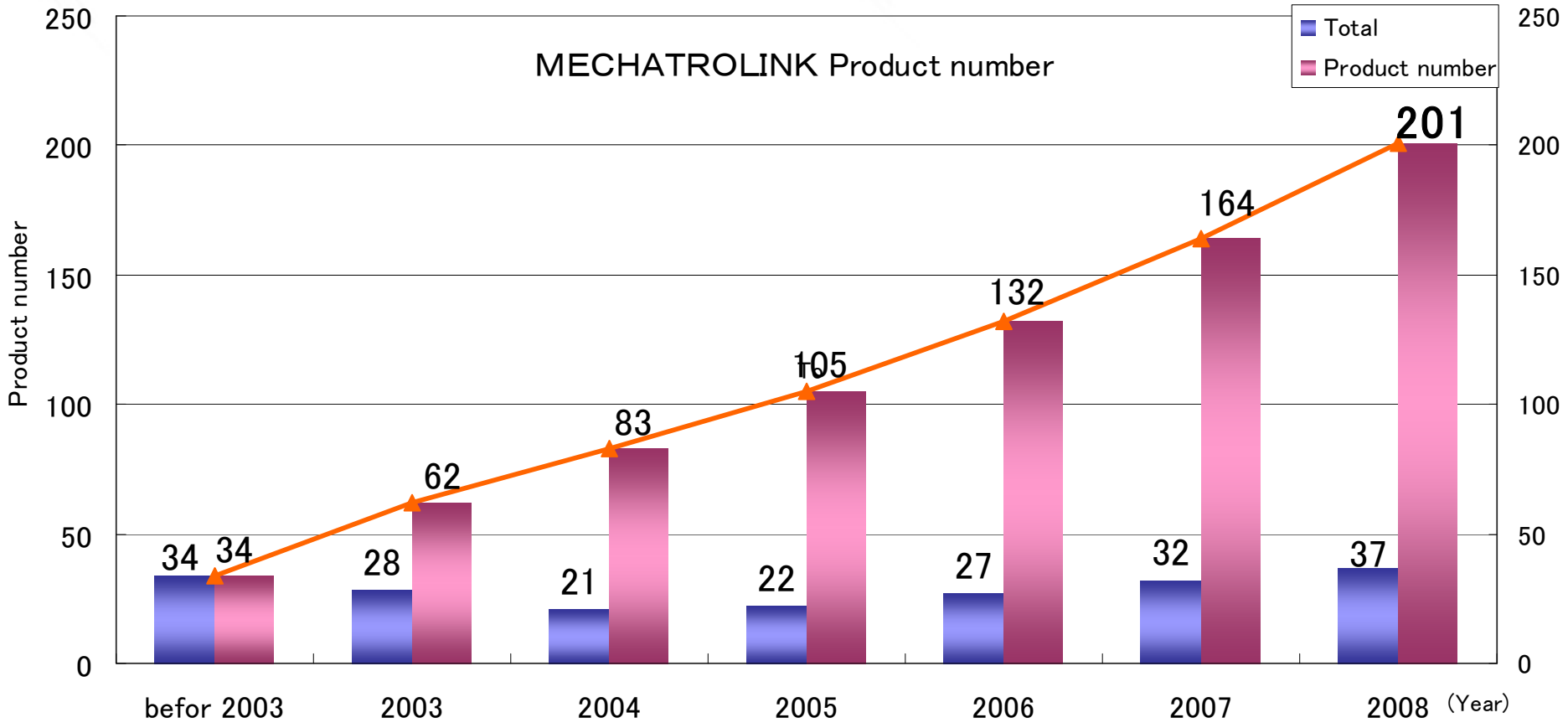
Shipping node number

MECHATROLINK communication ASIC total shipping nodes **1.5 million**



Number of member products

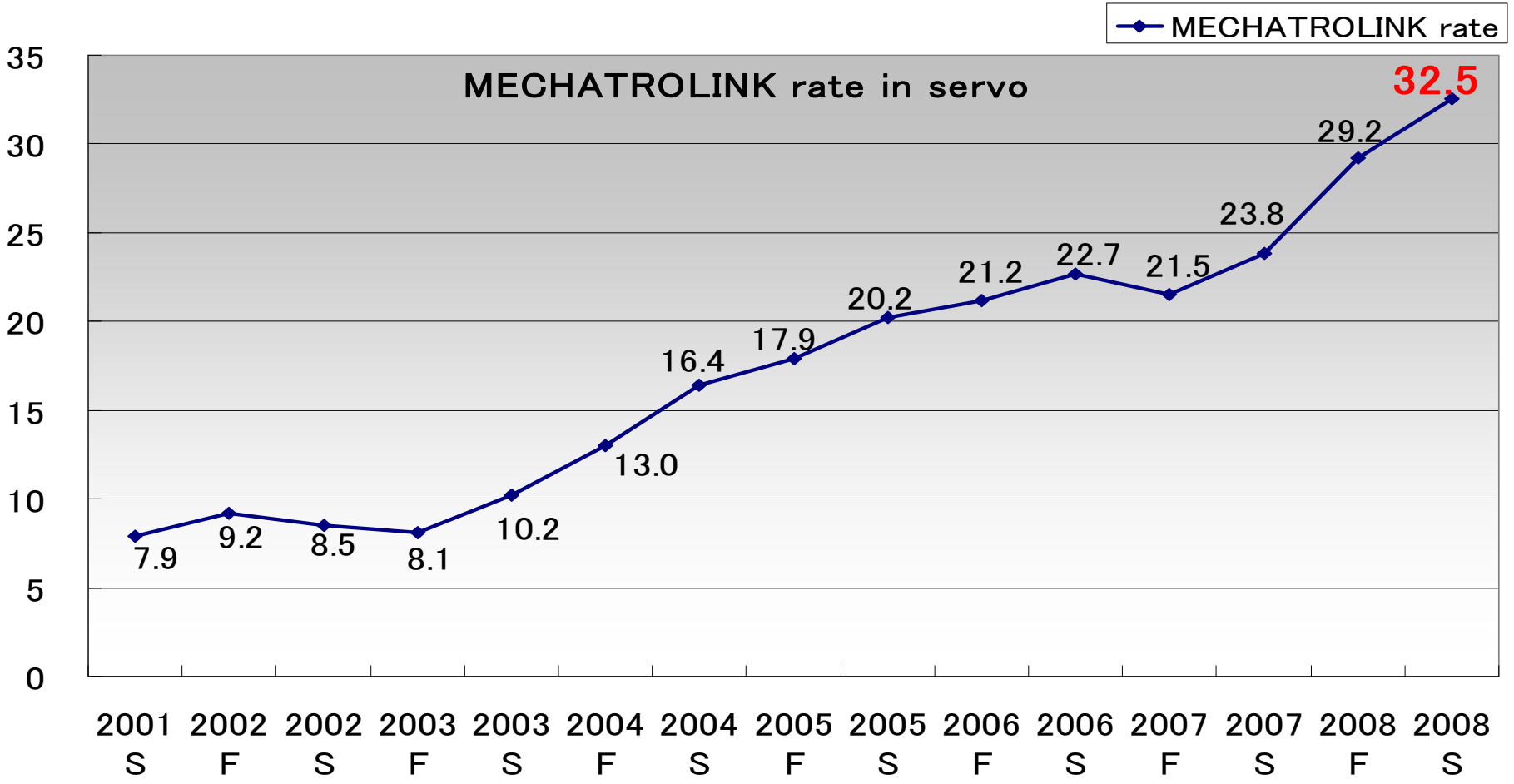
Number of MECHATROLINK product is 201



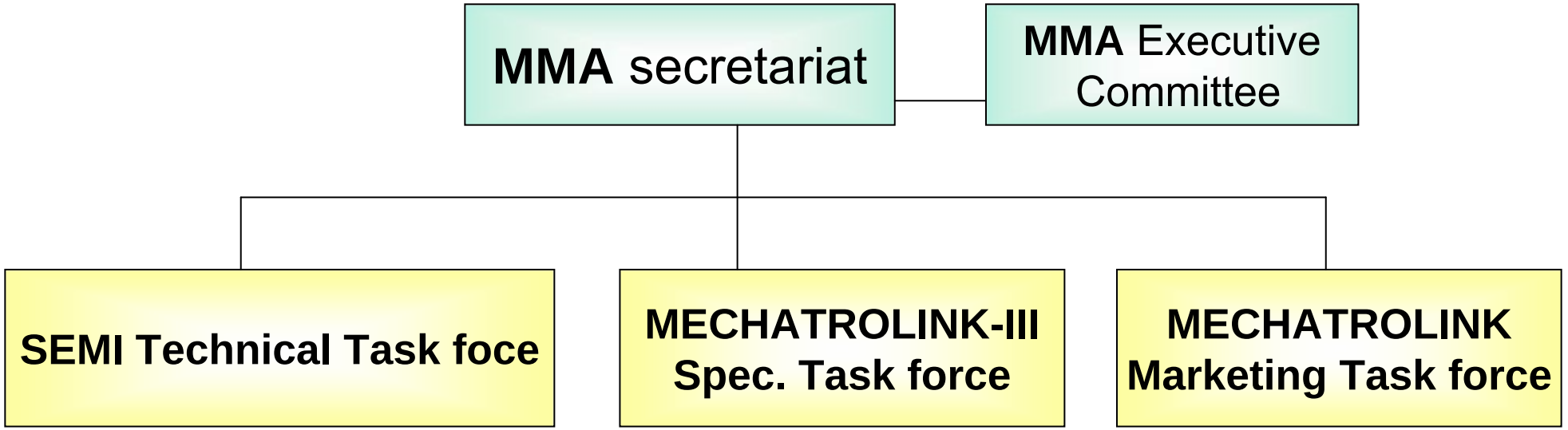
MECHATROLINK diffusion

MECHATROLINK

MECHATROLINK ratio in servo 32.5 %



Task force

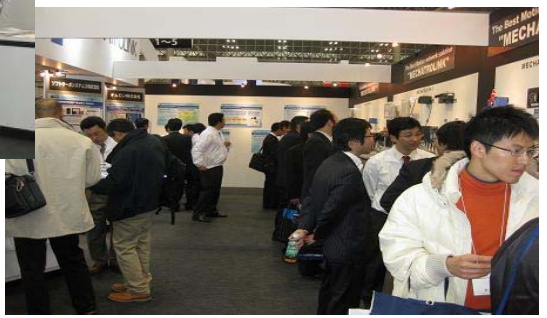

MMA secretariat
MMA Executive Committee
SEMI Technical Task foce
MECHATROLINK-III Spec. Task force
MECHATROLINK Marketing Task force

Publicity

Exhibition

SEMICON Japan 2008

Presentation by actor
and actress



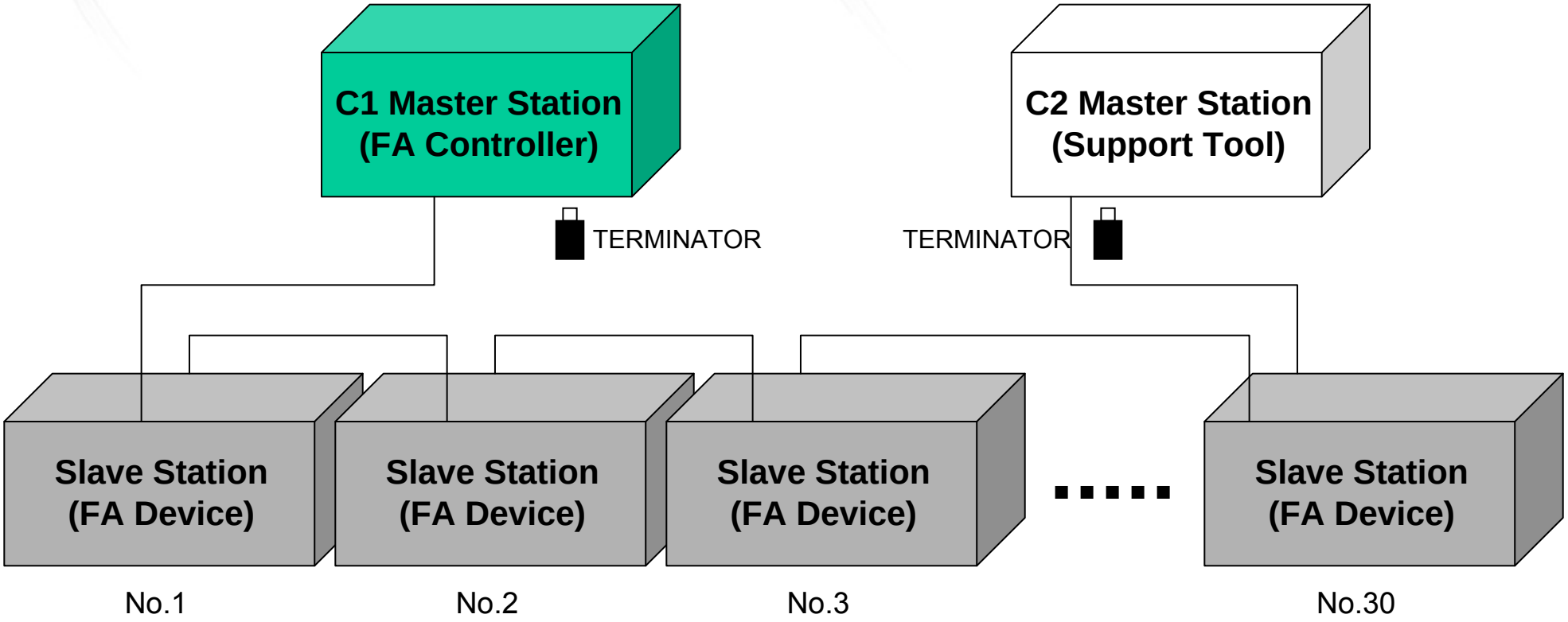
MECHATROLINK-II

Slave stations and Transmission cycle

Transmission cycle [msec]	Data size	
	17byte	32byte
0.25	2	1
0.5	7	4
1.0	15	9
1.5	23	15
2.0	30	21
2.5	30	26
3.0	30	30
3.5	30	30
4.0	30	30
4.5	30	30
5.0	30	30
5.5	30	30
6.0	30	30
6.5	30	30
7.0	30	30
7.5	30	30
8.0	30	30

- Condition : C2 master=0, retry=0
- The slave number in the table above is communication specification only. The number of slave that master can control depends on each master controller's specification.
- Which Transmission cycle is supported depends on master and slave's product specification.

System Configuration

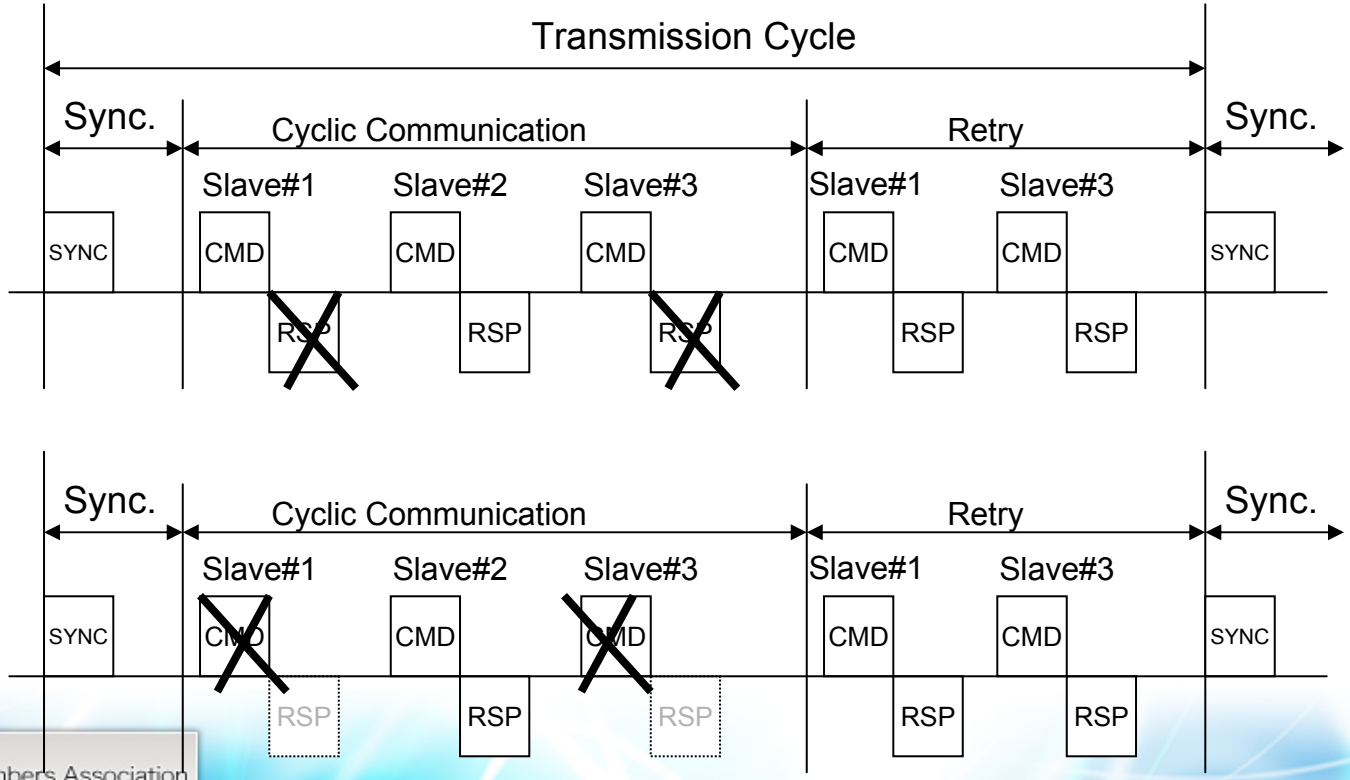


The number of slave node is depending on the master product specificatin

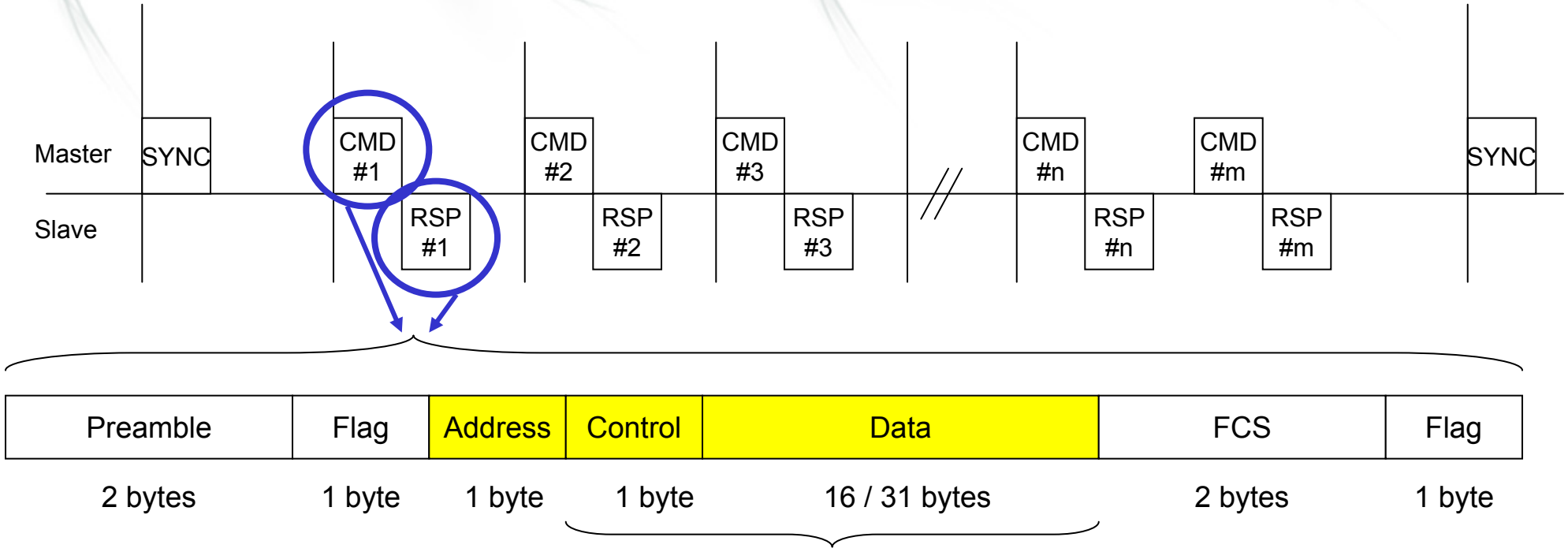
* Terminators are needed at the both ends of the network.
(Some products include a built-in terminator.)

Error Recovery Mechanism

- 1 retry for each failed station
  (up to 7 failed stations allowed)
- An automatic retry in a transmission cycle



Frame Format



- 17-byte Mode : Control (1 byte) + Data (16 bytes)
- 32-byte Mode : Control (1 byte) + Data (31 bytes)

Data Format

	byte	Command	Response
Main command	1	CMD	RCMD
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16	WDT	RWDT
Sub command	17	SUBCMD	RSUBCMD
	18		SUBSTATUS
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		

◆17 byte mode

Control (1 byte)

+ Main command (16 bytes)

◆32 bytes mode

Control (1 byte)

+ Main & Sub command (31 bytes)

Command sample

MECHATROLINK

CONNECT command(0Eh)

Byte	Command	Data (hex)
1	CONNECT	0E
2		00
3		00
4		00
5	VER	21
6	COM_MOD	02
7	COM_TIM	01
8		00
9		00
10		00
11		00
12		00
13		00
14		00
15		00
16	WDT	WDT

CONNECT Command: 0EH

VER: 21H (MECHATROLINK-II)

COM_MOD: 02H (Synchronous mode)

COM_TIM: 01H (communication cycle =01 x transmission cycle)

WDT: Data updates between master and slave when Synchronous mode

* All data must be 0 for 17 to 31 byte when 32 byte communication.

Command Group

CODE [Hex]	Command Group
00 to 1F	Common command group
20 to 2F	Common motion command group
30 to 3F	Standard servo command group
40 to 4F	Standard inverter command group
50 to 5F	Standard I/O command group
60 to 7F	Reserved
80 to 8F	Extended servo command group (For customization)
90 to 9F	Extended inverter command group (For customization)
A0 to AF	Extended I/O command group (For customization)

MECHATROLINK-II Commands

Code (hex)	Command	Function	Subcommand
00	NOP	No Operation Command	can be used
01	PRM_RD	Read Parameter Command	cannot be used
02	PRM_WR	Write Parameter Command	cannot be used
03	ID_RD	Read ID Command	can be used
04	CONFIG	Setup device Command	cannot be used
05	ALM_RD	Read Alarm or Warning Command	cannot be used
06	ALM_CLR	Clear Alarm or Warning Command	cannot be used
0D	SYNC_SET	Start Synchronous communication Command	cannot be used
0E	CONNECT	Eshtablish connection Command	cannot be used
0F	DISCONNECT	Release Connection Command	cannot be used
1B	PPRM_RD	Read Stored Parameter Command	cannot be used
1C	PPRM_WR	Write Stored Parameter Command	cannot be used
20	POS_SET	Set coordinates Command	cannot be used
21	BRK_ON	Apply Brake Command	cannot be used
22	BRK_OFF	Release Brake Command	cannot be used
23	SENS_ON	Turn Sensor ON Command	cannot be used
24	SENS_OFF	Turn Sensor OFF Command	cannot be used
25	HOLD	Stop Motion Command	can be used
28	LTMOD_ON	Request Latch Mode Command	can be used
29	LTMOD_OFF	Release Latch Mode Command	can be used
30	SMON	Servo Status Monitor Command	can be used
31	SV_ON	Servo ON Command	can be used
32	SV_OFF	Servo OFF Command	can be used
34	INTERPOLATE	Interpolation Command	can be used
35	POSING	Positioning Command	can be used
36	FEED	Feed Command	can be used
38	LATCH	Interpolation with Position Latch Function Command	can be used
39	EX_POSING	External Signal Input Positioning Command	can be used
3A	ZRET	Zero Point Return Command	can be used
3C	VELCTRL	Velocity Control Command	can be used
3D	TRQCTRL	Torque (Thrust) Control Command	can be used
3E	ADJ	Adjusting Command	cannot be used
3F	SVCTRL	General-purpose Servo Control Command	can be used

MECHATROLINK-II Subcommand

Code (hex)	Command	Function
00	NOP	No Operation Command
01	PRM_RD	Read Parameter Command
02	PRM_WR	Write Parameter Command
05	ALM_RD	Read Alarm or Warning Command
1C	PPRM_WR	Write Stored Parameter Command
28	LTMOD_ON	Request Latch Mode Command
29	LTMOD_OFF	Release Latch Mode Command
30	SMON	Servo Status Monitor Command

- In order to enable to use Subcommand, set the COM_MOD bit in the CONNECT command even in 32 byte communication.
- Combination of main command and subcommand is different depending on the product specification.

MECHATROLINK-II ASIC

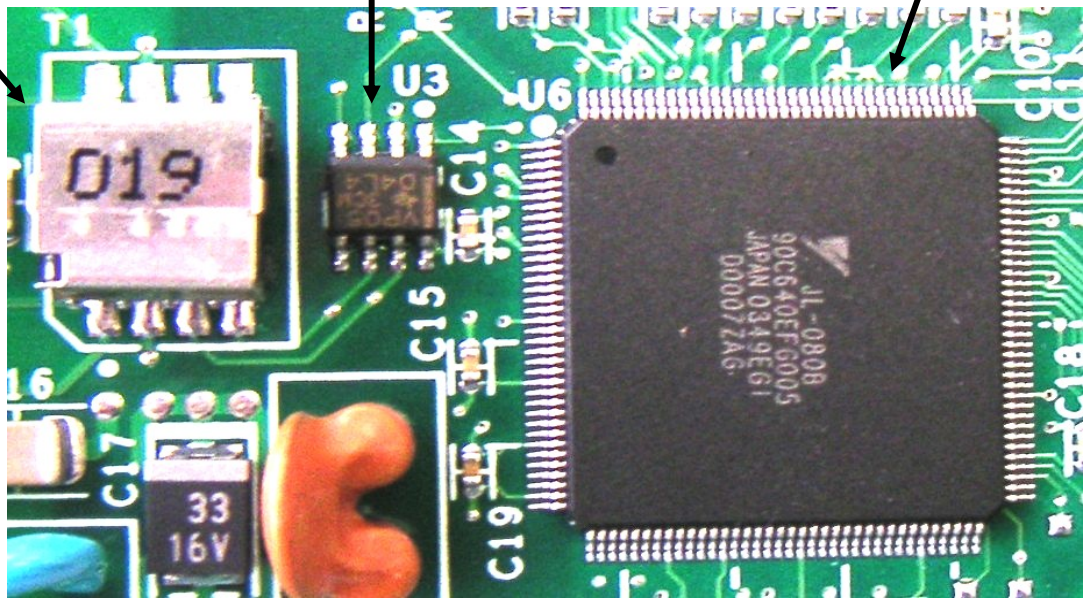
ASIC JL-080B	•Support MECHATROLINK-I/II •For Master/Slave Lot：60piece/Lot, 300/pieceLot	
ASIC JL-098B	•Support MECHATROLINK-I/II •For Master Lot：300piece/Lot	
ASIC JL-052C	•Support MECHATROLINK-I/II •For Slave Lot：90piece/Lot, 450piece/Lot	

Parts appearance

Pulse transformer

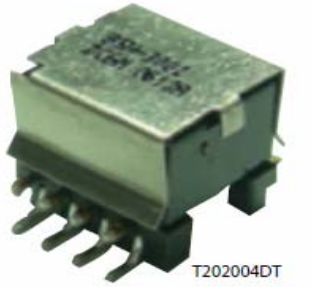
Driver/Receiver

ASIC(JL-080)



40mm

T202004DT

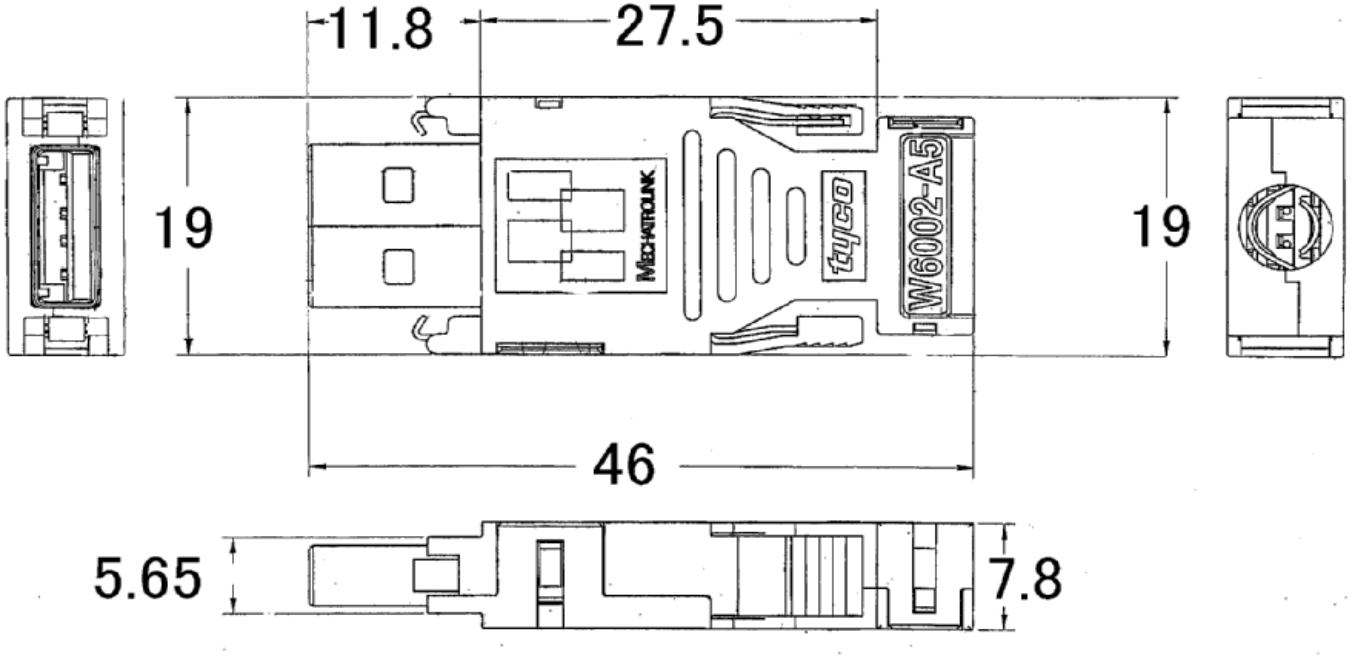


RoHS-compliant

Pulse transformer in above picture is not RoHS-compliant.
T202004DT is RoHS-compliant Pulse transformer.(see left picture)

Cable Appearance, measurement

JEPMC-W6002-05-E (5m)

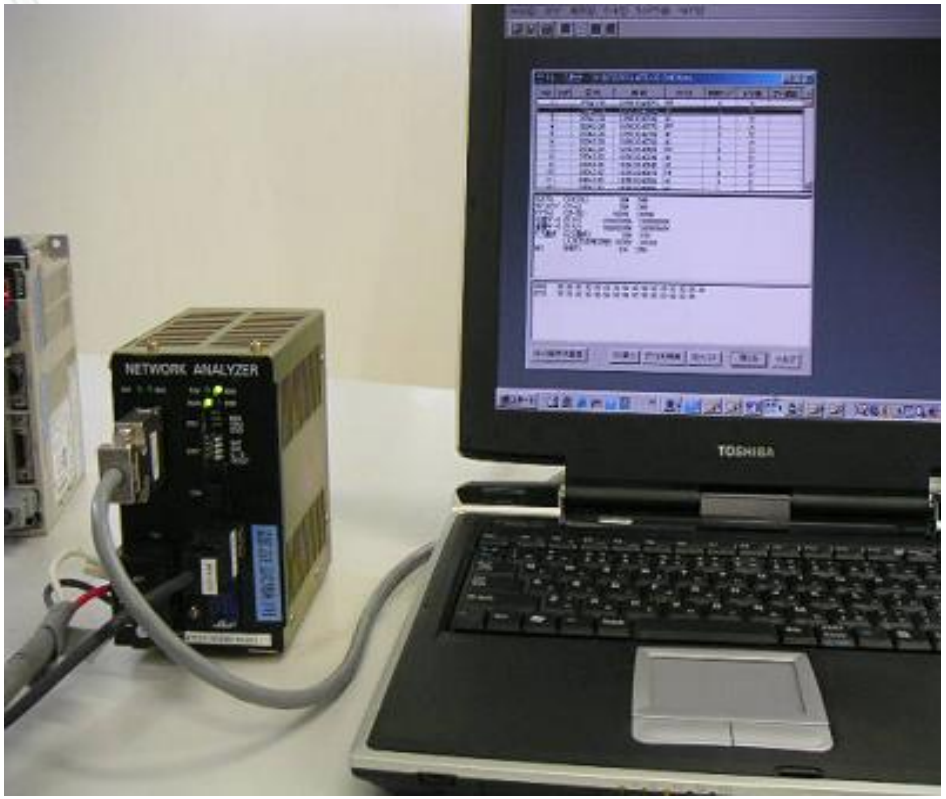


USB typeA

MECHATROLINK-II

Support tools

Network Analyzer



Name: Network Analyzer

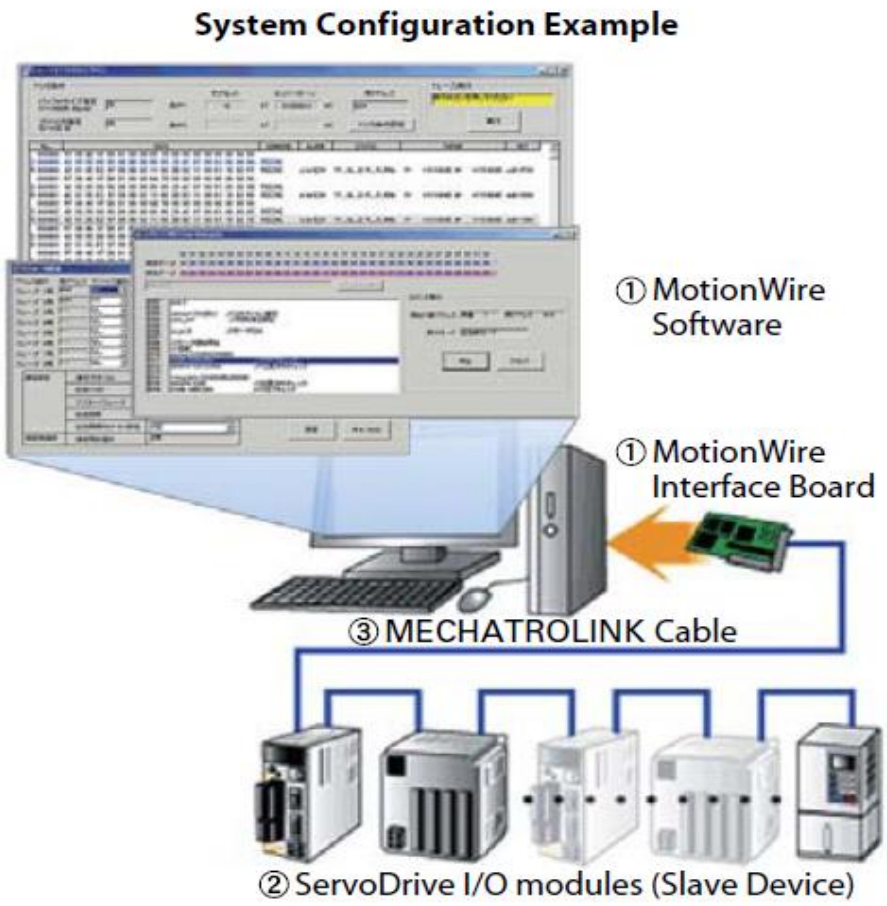
1) Network Analyzer unit
   Part #: 87215-95121-S0103
2) Network Analyzer software
   Part #: JEPMC-NWAN700

Manufacturer : Yaskawa

M-II I/F cards

[standard PCI] **JAPMC-NT110** [low-profile PCI] **JAPMC-NT111**	• For Master • Communication I/F card with JL-080B (CPU-less) • Supported OS –Windows 2000/XP with RTX 5.1.1 or RTX 6.0.1 –Windows 2000/XP	
[PC/104 bus] **JAPMC-NT115**	• For Master • Communication I/F card with JL-080B (CPU-less)	

MotionWire StarterKit



Master station for slave development

Study tool for MECHATROLINK protocol

Name: MotionWire StarterKit

Manufacturer:
Yaskawa Information System

Sample Kit

Parts kit for MECHATROLINK standard circuit. Convenient for developer who wants to make MECHATROLINK board.

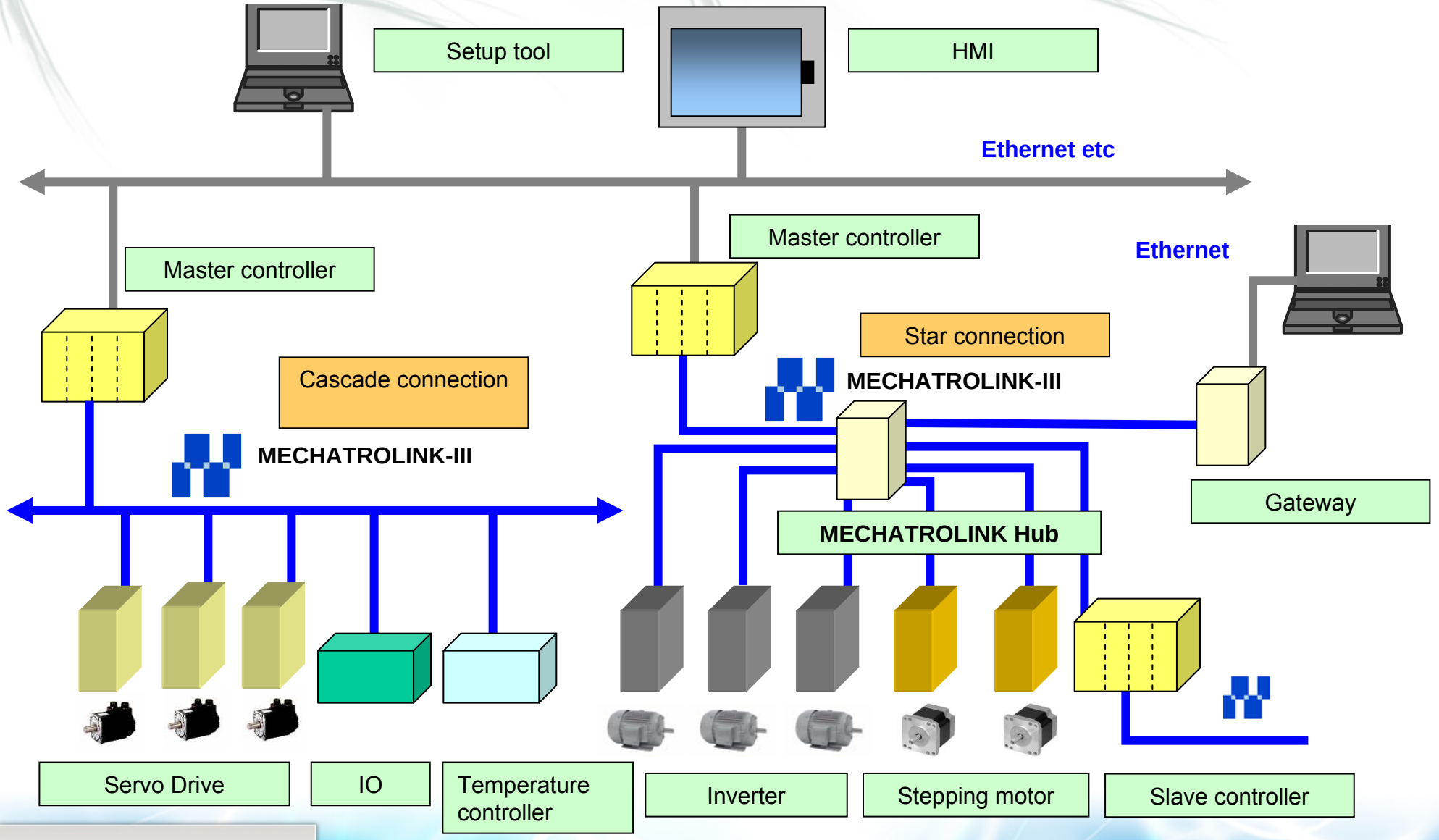
■JL-080 sample kit
Type: JEPMC-OPM2SK-1-E
Contents: 5 parts each of following parts
JL-080B (ASIC 144pin 20mm)
T202004DT (pulse transformer)
SN65HVD05DR (driver/receiver)
SG-8002JC 40MHz (crystal oscillator)
1903815−1 (USB 2-stage connector)

■JL-052 sample kit
Type:JEPMC-OPM2SK-2-E
Contents: 5 parts each of following parts
JL-052C (ASIC 144pin 14mm)
T202004DT (pulse transformer)
SN65HVD05DR (driver/receiver)
FA-365 15MHz (crystal oscillator)
1903815−1 (USB 2-stage connector)

■JL-098 sample kit
Type: JAPMC-OPM2SK-3-E
Contents: 5 parts each of following parts
JL-098B (ASIC 144pin 20mm)
T202004DT (pulse transformer)
SN65HVD05DR (driver/receiver)
SG-8002CE 25MHz (crystal oscillator)
1903815-1 (USB 2-stage connector)

MECHATROLINK-III

MECHATROLINK-III system configuration



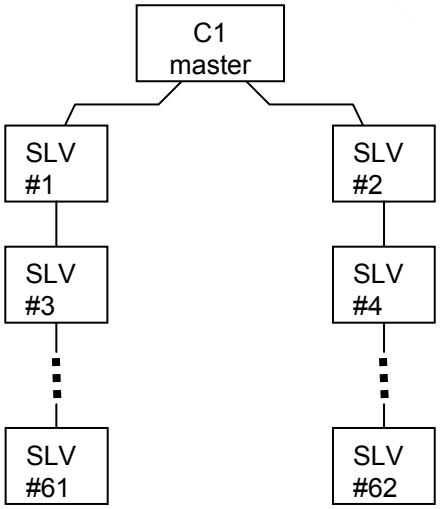
Cyclic time and # of nodes

MECHATROLINK

Maximum # of slaves are following tables:

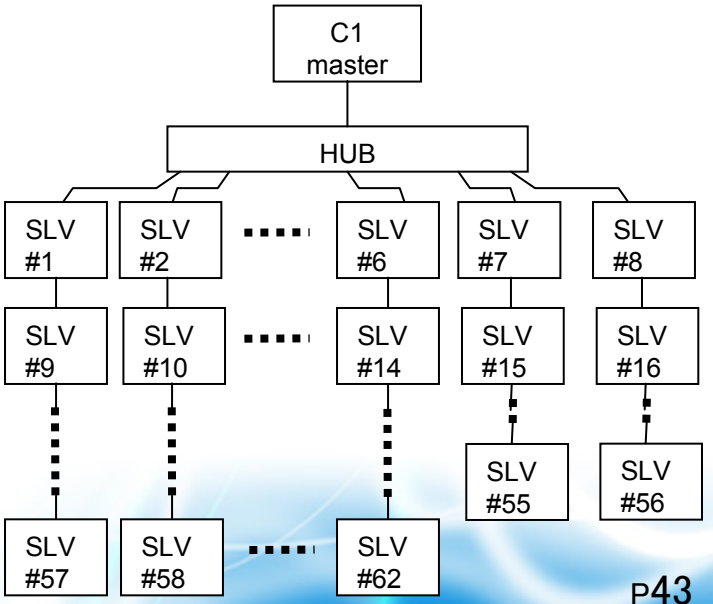
Cyclic time	Data size (byte)			
	16	32	48	64
31.25us	1	1	0	0
62.5us	2	2	2	2
125us	6	6	5	4
250us	11	11	10	9
500us	19	19	18	17
1ms	31	31	29	28
2ms	49	49	47	45
4ms	62	62	62	62
8ms	62	62	62	62

Cascade (C1 master has 2ports, and 0.2m cable each)

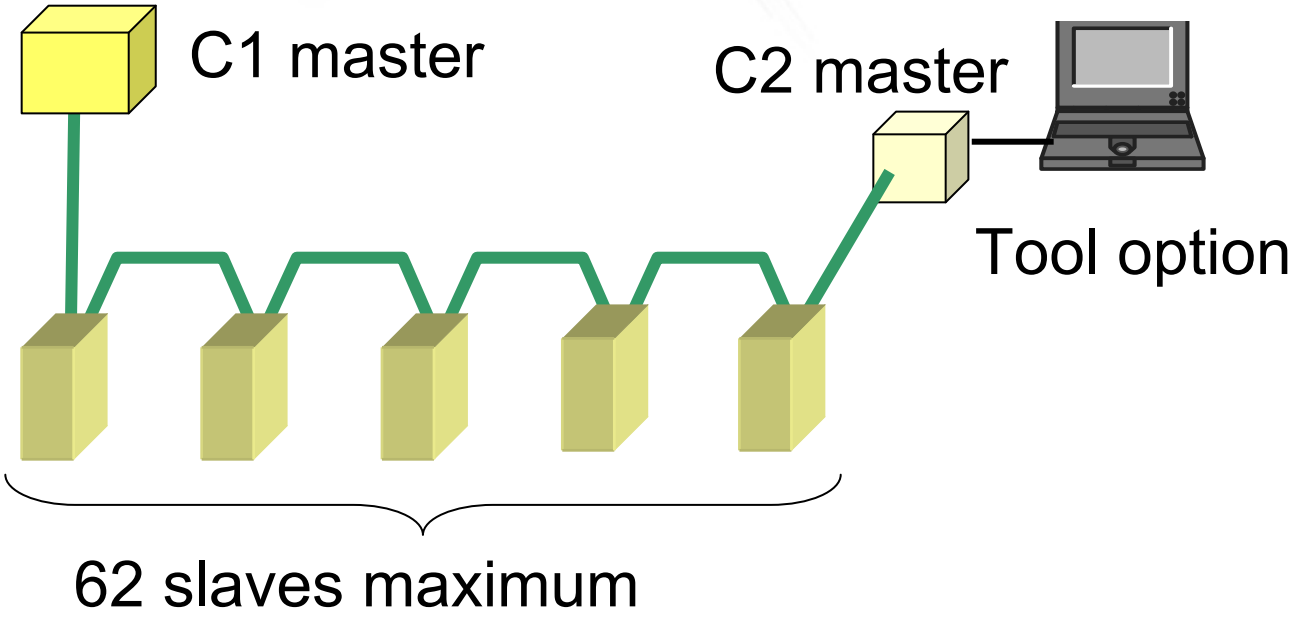


Cyclic time	Data size (byte)			
	16	32	48	64
31.25us	0	0	0	0
62.5us	2	2	2	2
125us	6	6	5	4
250us	12	12	11	10
500us	24	24	21	19
1ms	42	42	39	36
2ms	62	62	62	62
4ms	62	62	62	62
8ms	62	62	62	62

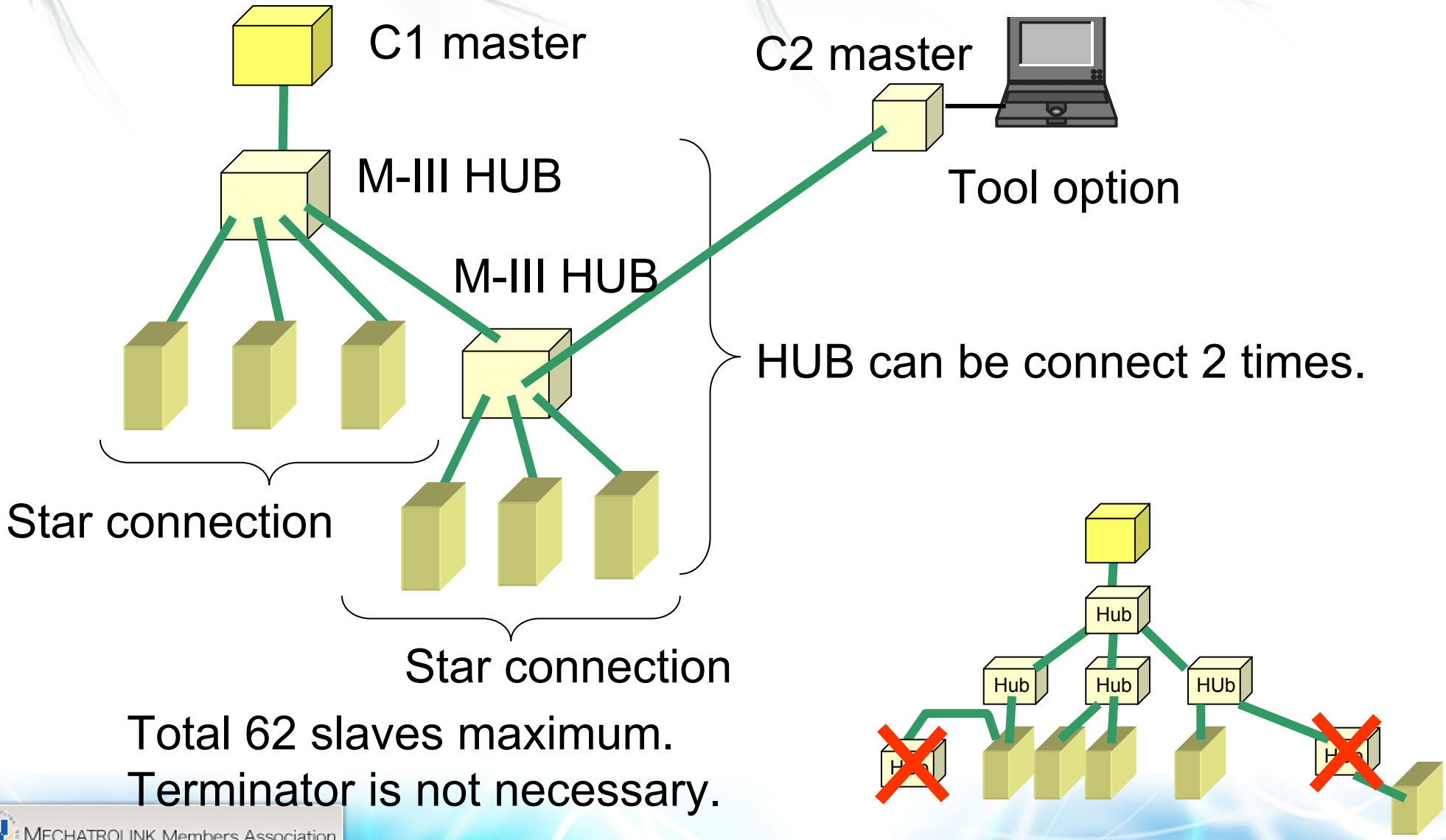
Star (HUB x 1, and 0.2 cable each)



Topology cascade

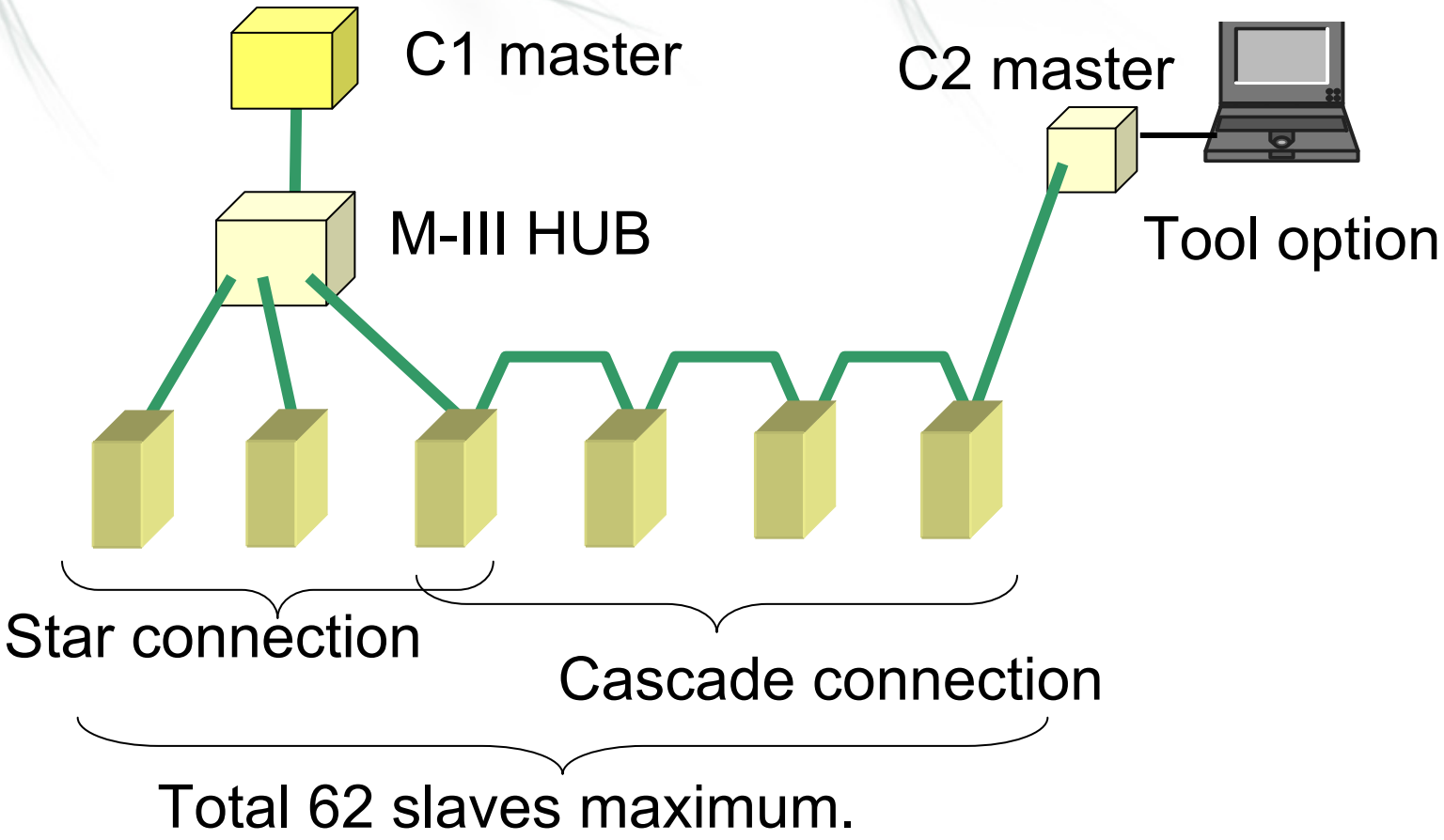


Topology Star



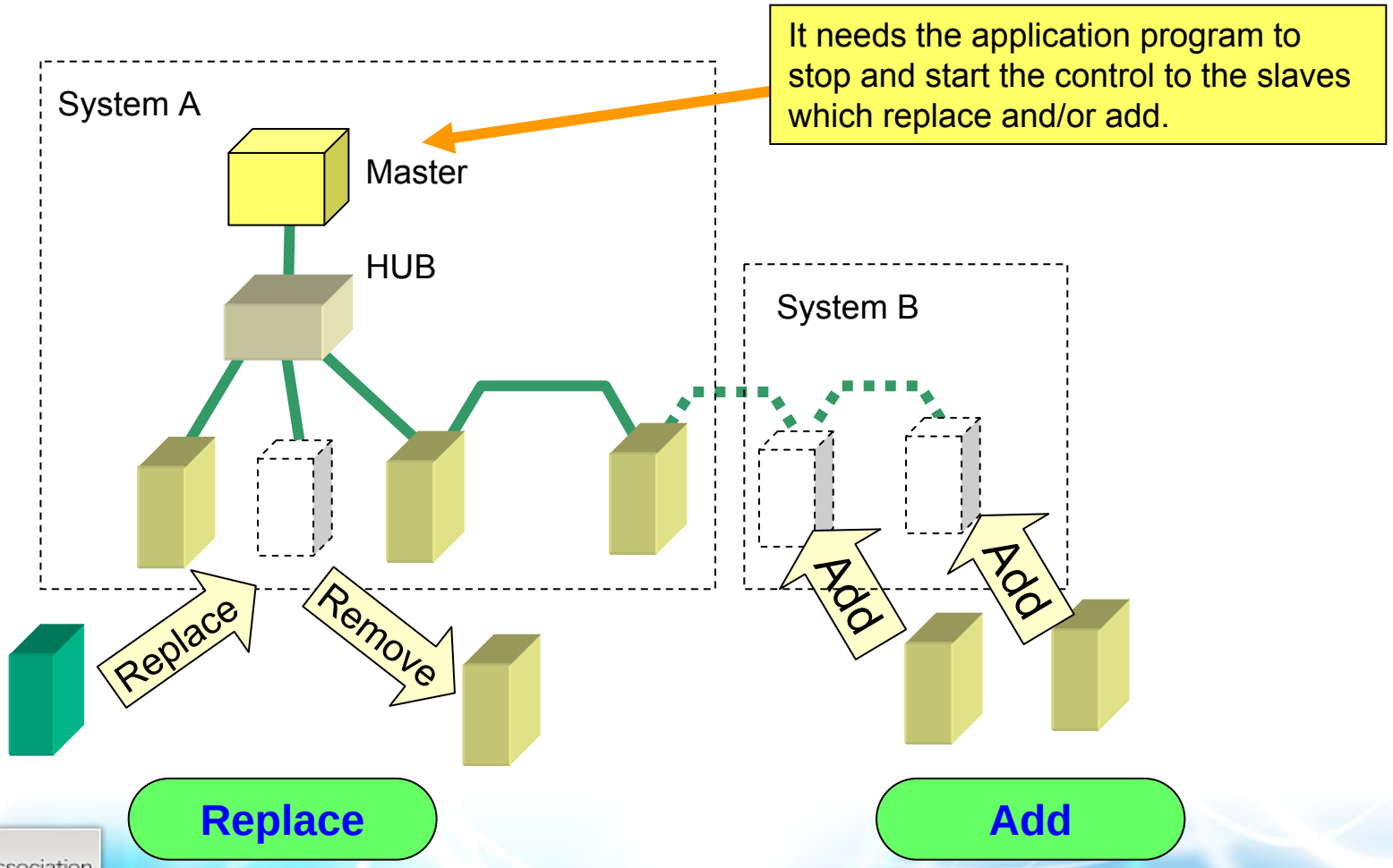
Total 62 slaves maximum.
Terminator is not necessary.

Topology Star & Cascade mix



Hot-plug

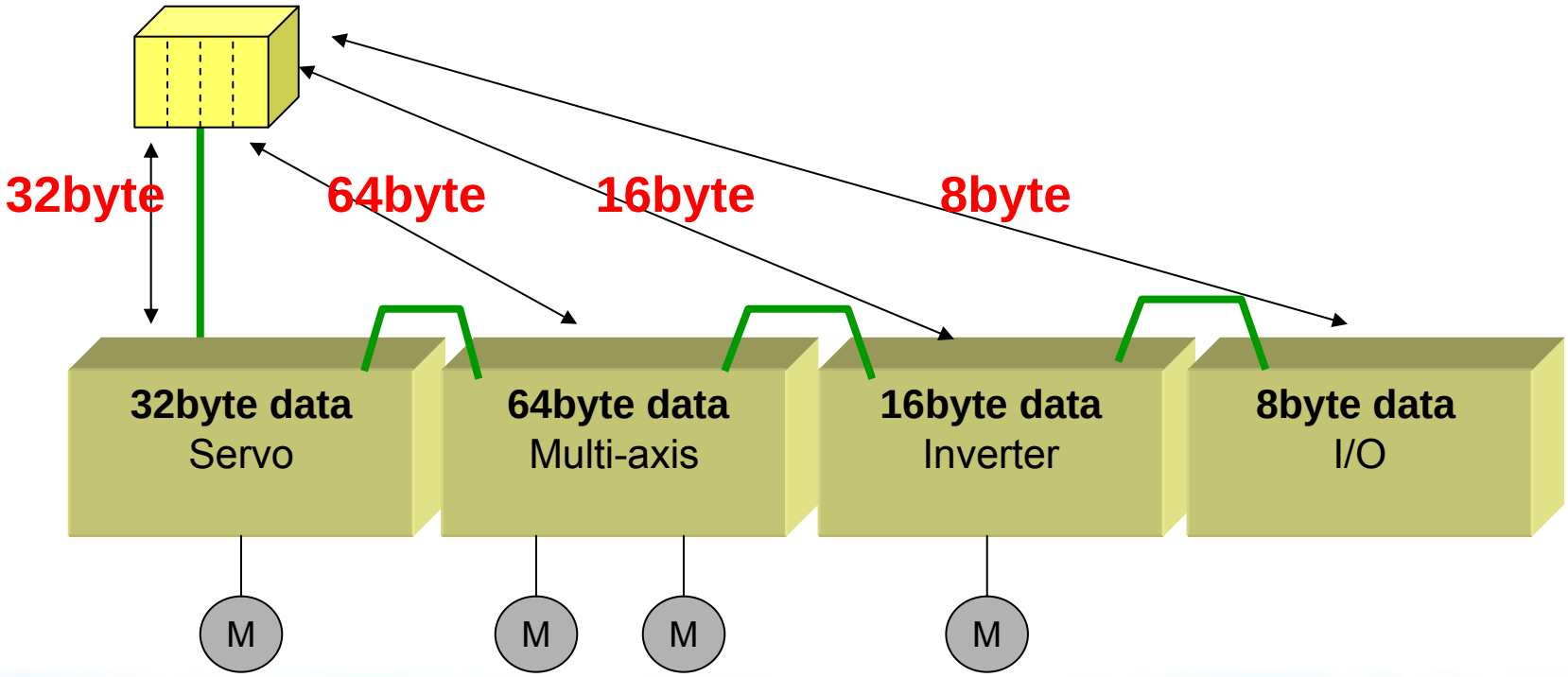
Slaves and C2 master can be connected to the network after cyclic communication started. As a result, it is enable to replace and/or add the slaves while the master controls other slaves.



Data length

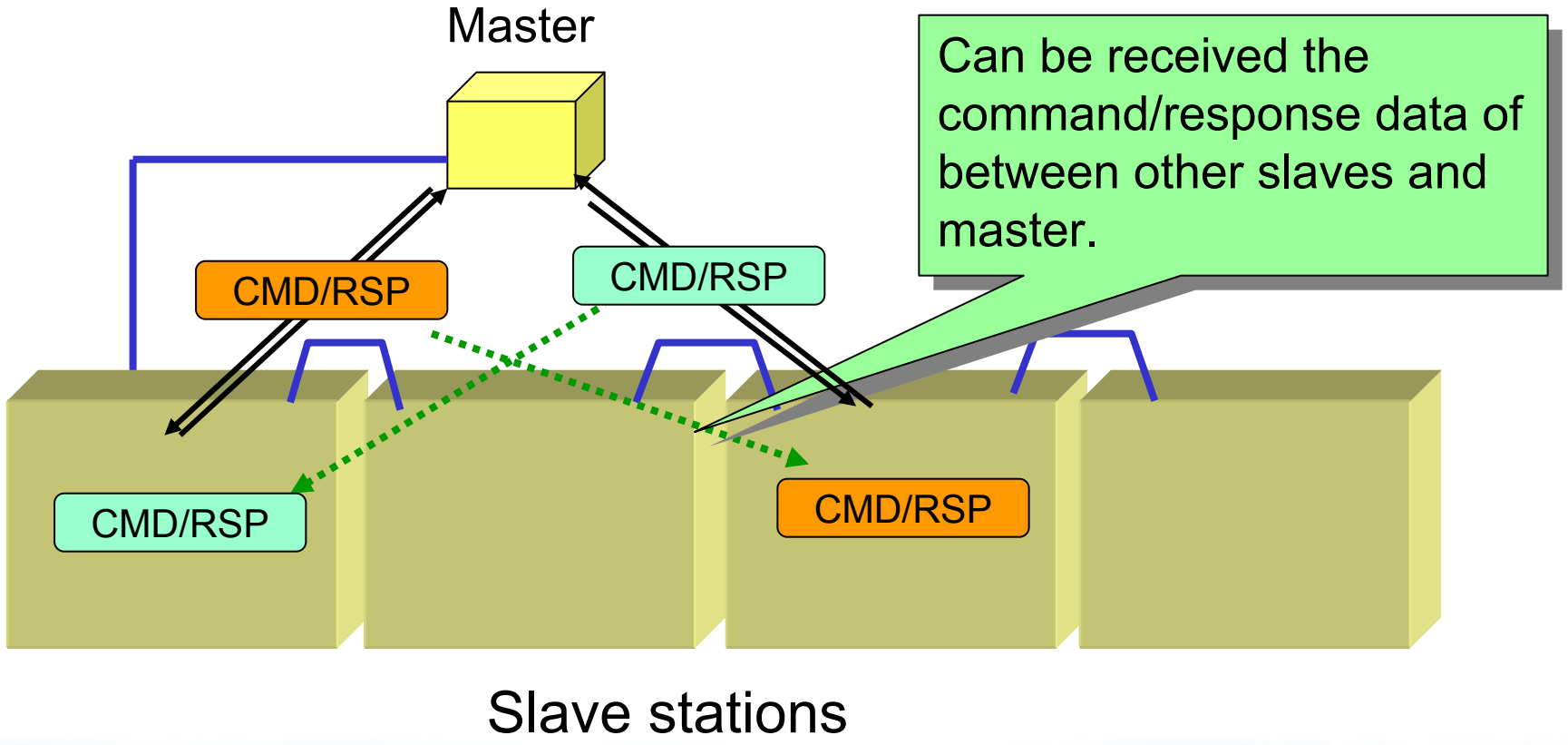
Different communication data size for each slave node can be mixed.
Possible to use the best network corresponding to the system.

MECHATROLINK-III controller (master)



Monitor slave

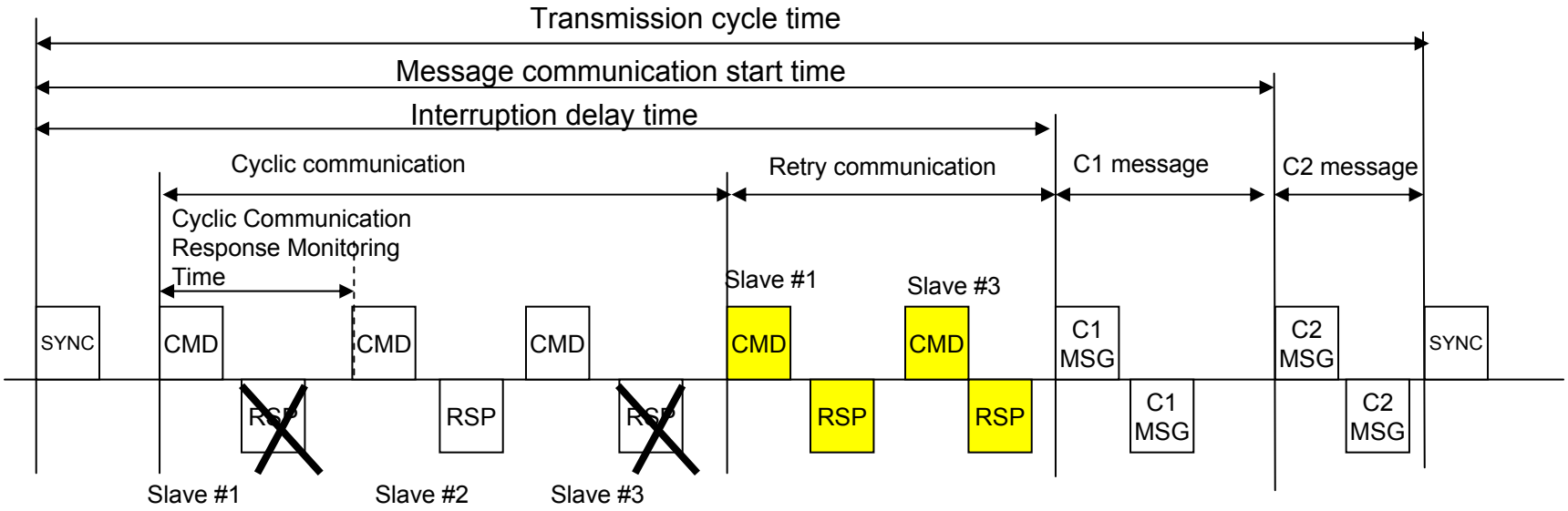
Monitor slave can be received the command/response data of other slave stations and master.



Retry function

ASIC has a retry function same as MECHATROLINK-II.

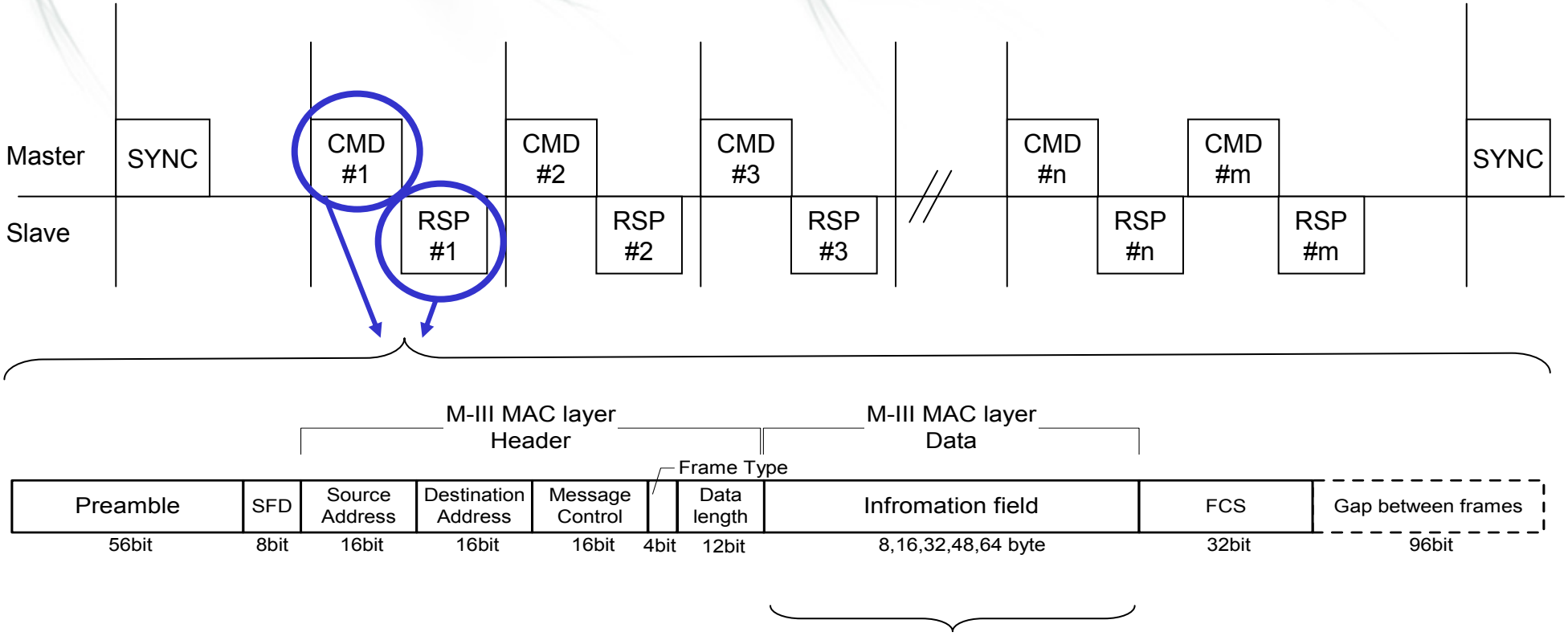
- Max. 62 times (can try the retry when retry failed if it is available time to do.)
- ASIC tries the retry communication in same transmission cycle time automatically.



C1 master ASIC tries to send the command as a retry to the slave which does not send the response within cyclic communication response monitoring time.

Max. retry times is set to ASIC by access driver.

Frame format



8 / 16 / 32 / 48 / 64 bytes : Information field

Standard Servo Profile Format

	Byte	Command	Response
Main command	0	CMD	RCMD
	1	WDT	RWDT
	2	CMD_CTRL	CMD_STAT
	3		
	4	CMD_DATA	RSP_DATA
	5		
	6		
	7		
	8		
	:		
	:		
	28		
	29		
	30		
	31		
Sub command	32	SUBCMD	RSUBCMD
	33	SUB_CTRL	SUB_STAT
	34		
	35		
	36	SUB_CMD_DATA	SUB_RSP_DATA
	37		
	38		
	:		
	:		
	45		
	46		
	47		

32 byte mode

Header(4byte) + Data field (28byte)

for Main command

48 byte mode

Header(4byte) + Data field (44byte)

for Main command + Sub command

Profile type

Profiles are subclassified according to the purpose and use. To realize, with MECHATROLINK-III, the high-resolution and long stroke system that the standard servo profile cannot support, for example, add a profile and define the command specifications specific to the function.
The MECHATOLINK Members Association manages the profile types.

Code	Profile	Code		Contents
0x00	MECHATROLINK-II compatible profile	0x00	MECHATROLINK-II compatible profile	The profile that supports the compatibility of the MECHATROLINK-III-compatible devices, enabling them to operate in the MECHATROLINK-II application layer.
0x01		0x01	Acquiring the ID information in event-driven communication	The special profile type used to acquire the ID data, common parameters, and so on by the ID_RD command, the MEM_RD command or other commands in the event-driven communication.
0x02 – 0x0F	Reserve			
0x10 – 0x1F	Servo Profile	0x10	Standard Servo Profile	The profile that the MECHATROLINK-III-compatible servo devices and stepping motor drive devices support.
		0x11	High-resolution Servo profile	
		:	Multi-axis Servo Profile	
0x20 – 0x2F	Inverter Profile	0x20	Standard Inverter Profile	The profile that the MECHATROLINK-III-compatible inverter devices support.
		:		
0x30 – 0x3F	I/O Profile	0x30	Standard I/O Profile	The profile that the MECHATROLINK-III-compatible I/O devices support.
		:		
0x40 – 0xFF	Reserved			(SEMI, Safety, etc)

* The table above is just an example. Some profiles in the table are not defined at this time.

MECHATROLINK-III Command

MECHATROLINK

SV_ON

Byte	Command	Response
0	SV_ON (31H)	SV_ON (31H)
1	WDT	RWDT
2	CMD_CTRL	CMD_STAT
3		
4	SVCMD_CTRL	SVCMD_STAT
5		
6		
7		
8	SVCMD_IO	SVCMD_IO
9		
10		
11		
12	Reserve	CPRM_SEL_MON1
13		
14		
15		
16		CPRM_SEL_MON2
17		
18		
19		
20		MONITOR1
21		
22		
23		
24		MONITOR2
25		
26		
27		
28		MONITOR3
29		
30		
31		

POSING

Byte	Command	Response
0	POSING (35H)	POSING (35H)
1	WDT	RWDT
2	CMD_CTRL	CMD_STAT
3		
4	SVCMD_CTRL	SVCMD_STAT
5		
6		
7		
8	SVCMD_IO	SVCMD_IO
9		
10		
11		
12	TPOS	CPRM_SEL_MON1
13		
14		
15		
16	TSPD	CPRM_SEL_MON2
17		
18		
19		
20	ACCR	MONITOR1
21		
22		
23		
24	DECR	MONITOR2
25		
26		
27		
28	TLIM	MONITOR3
29		
30		
31		

FEED

Byte	Command	Response
0	FEED (36H)	FEED (36H)
1	WDT	RWDT
2	CMD_CTRL	CMD_STAT
3		
4	SVCMD_CTRL	SVCMD_STAT
5		
6		
7		
8	SVCMD_IO	SVCMD_IO
9		
10		
11		
12	Reserve	CPRM_SEL_MON1
13		
14		
15		
16	TSPD	CPRM_SEL_MON2
17		
18		
19		
20	ACCR	MONITOR1
21		
22		
23		
24	DECR	MONITOR2
25		
26		
27		
28	TLIM	MONITOR3
29		
30		
31		

MECHATROLINK-III Hardware

- **MECHATROLINK-III Communication ASIC**
  - Physical layer : 100 base-TX
- **Cable**
  Category 5e / STP (Shielded Twist Pair)
- **Connector**
  RJ-45 or Industrial mini I/O connector

M-III cable

RJ-45

Industrial mini I/O connector

MECHATROLINK

MECHATROLINK-III ASIC packages

Package : LQFP JL-101

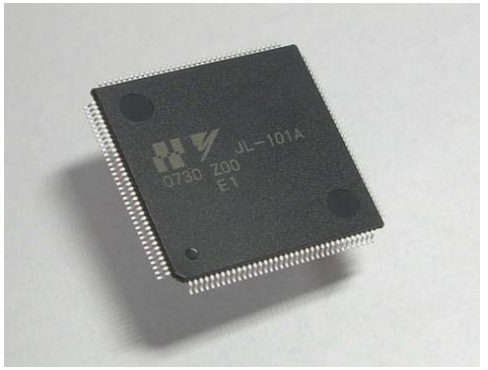
Size : 20 mm x 20mm

Pins : 144 pin

Thermal resistance : 46 C/w

Order No. JL-101A-LQFP-60P (60 pieces)

JL-101A-LQFP-300P (300 pieces)



Package : FBGA JL-100

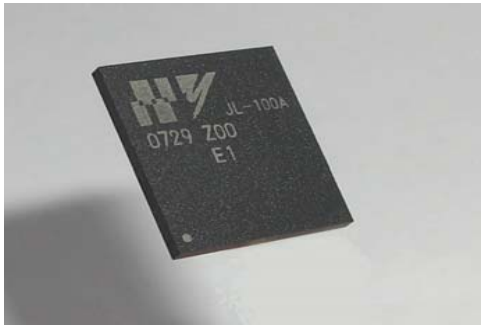
Size : 12 mm x 12mm

Pins : 144 pin

Thermal resistance : 43 C/w

Order No. JL-100A-FBGA-76P (76 pieces)

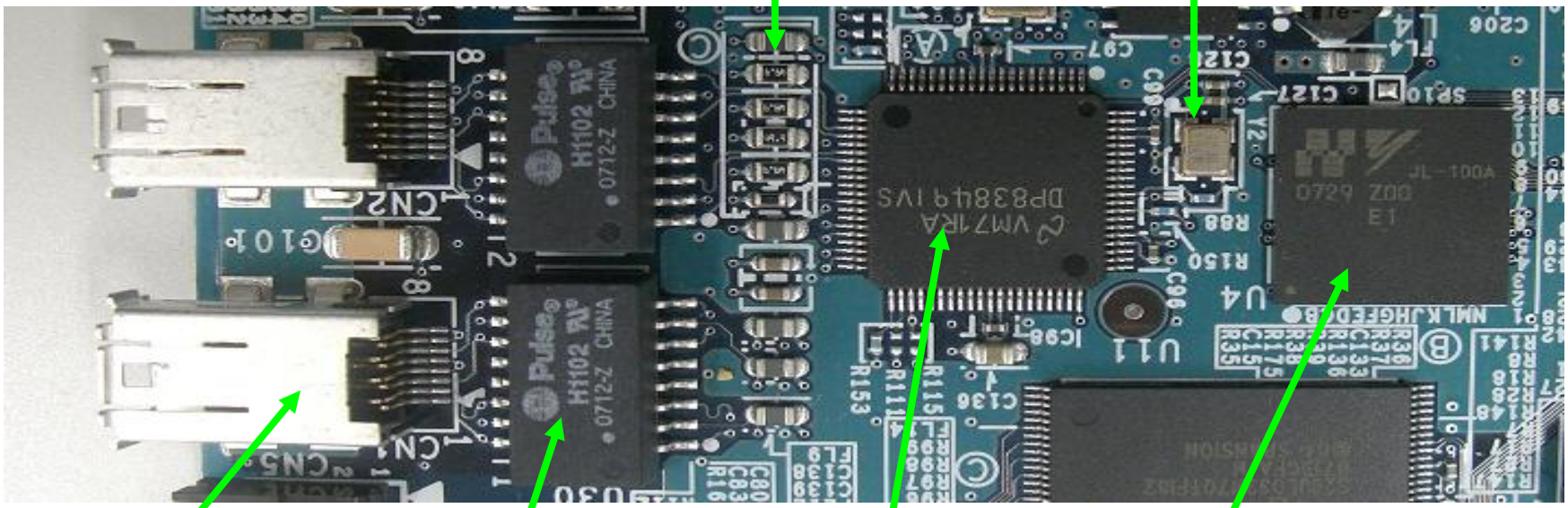
JL-100A-FBGA-304P (304 pieces)



<Note>

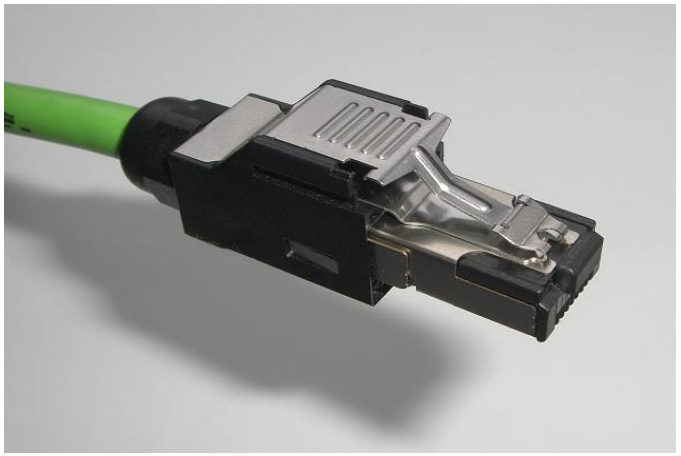
These ASICs have the same functions, but size and thermal resistance are different.

Board figure



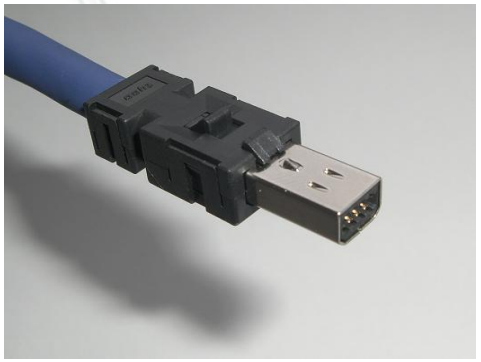
Connector figure and size

2 types of connector can be use for MECHATROLINK-III.

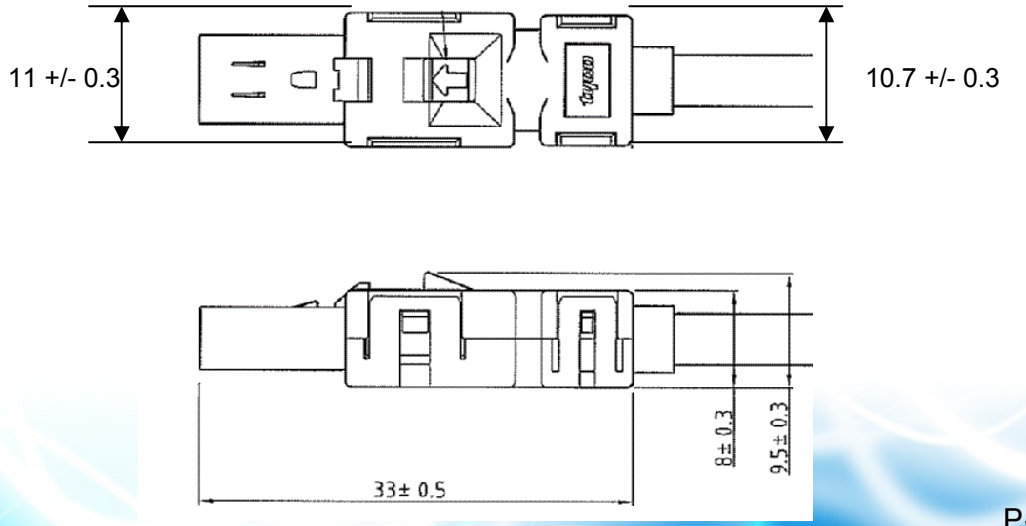


TYCO AMP
FA type RJ-45

Recommended parts No. :
1903526-1



TYCO AMP
IMI connector
Parts No. 2040008-1



Ethernet cable

Recommended cable:

DYDEN CORPORATION
Ethernet cable
Type: RS-MIII(20276)

Standard Ethernet STP Cat5e cable can be use.

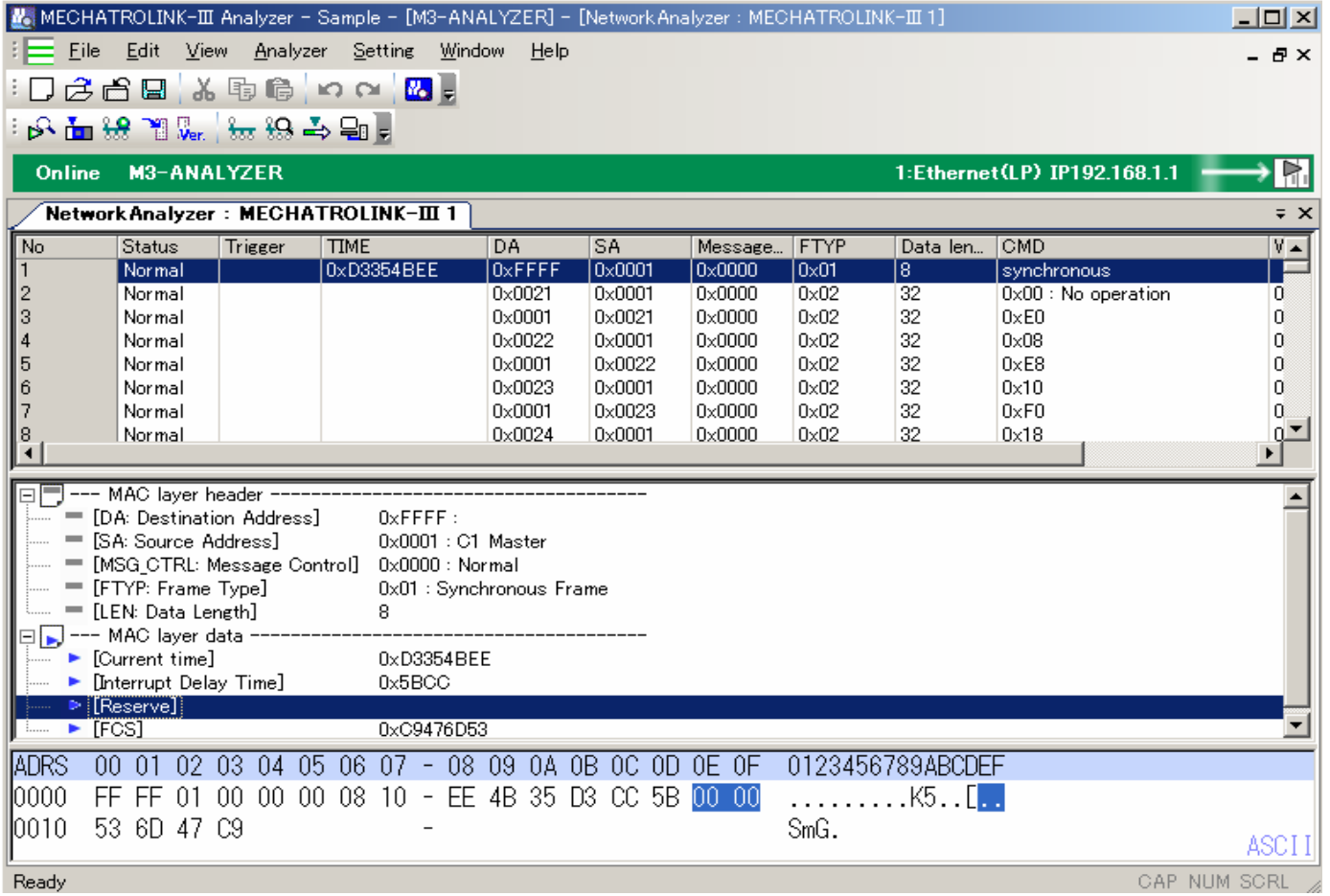
In case of using standard cable from market, make sure the minimum round radius specification of the cable. In case of short cable use such as 20cm.

Also system evaluation is needed in case of using a long distance cable with ferrite core or junction box. Make sure there is no noise effect.

MECHATROLINK-III

Support tools

MECHATROLINK-III Network Analyzer



Vendor : Yaskawa Electric Corporation

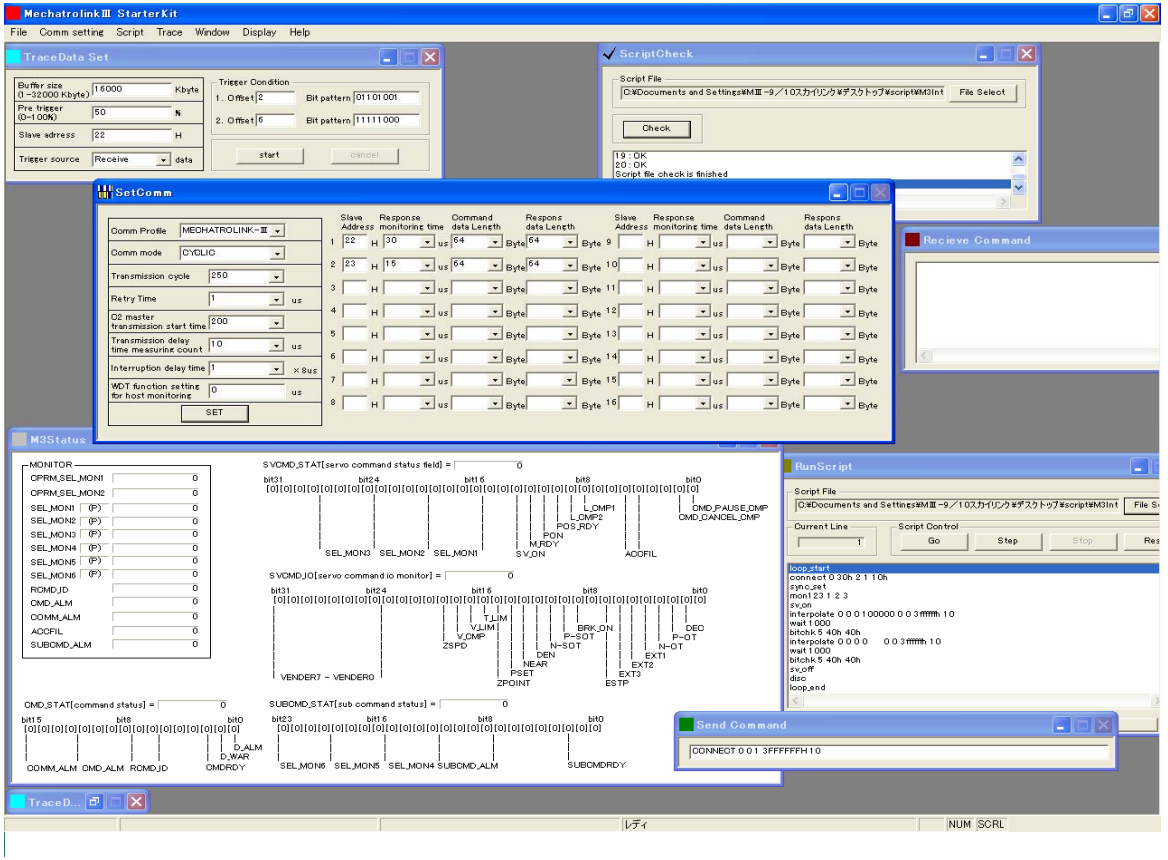
MECHATROLINK Interface card

[standard PCI] JAPMC-NT110 [low-profile PCI] JAPMC-NT111	•For M-Ⅱ master device •Communication interface card with JL-080(CPU-less) • OS –Windows2000/XP+RTX6.0.1 –Windows2000/XP/Vista	
[PC/104] JAPMC-NT115	•For M-Ⅱ master device •Communication interface card with JL-080(CPU-less)	
[standard PCI] JAPMC-NT112A-E	• For M-Ⅲ master device • Communication interface card with JL-101 (CPU-less) • OS –Windows2000/XP+RTX6.0.1 –Windows2000/XP/Vista	

Vendor : Yaskawa Electric Corporation

MECHATROLINK-III StarterKit

MECHATROLINK-III starterkit is for slave device developer. StarterKit is able to send any commands to the MECHATROLINK-III slaves.



Vendor : SKY LINK Corporation

Sample kit for developing prototype

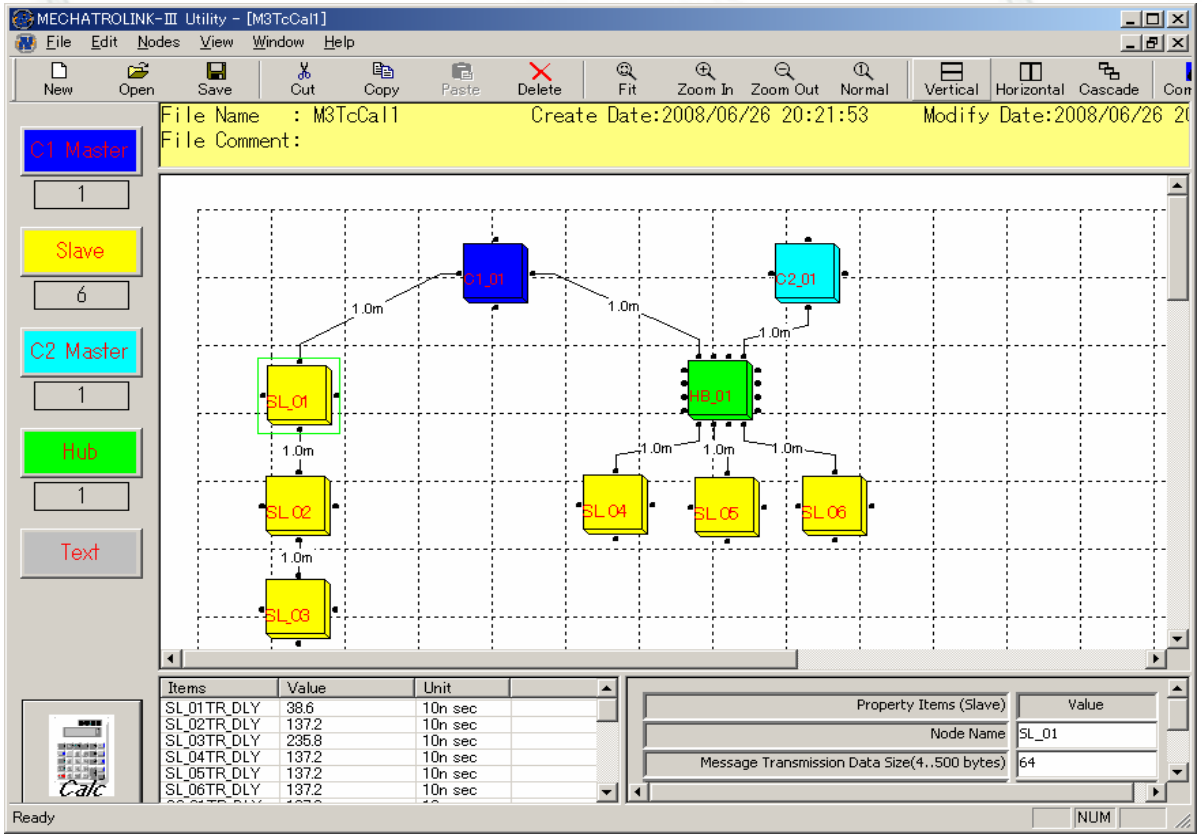
Sample kit includes 5 sets of main parts for prototyping MECHATROLINK-III device (master/slave). There are 2 type of Sample kit as follows:

JL-100 sample kit
Product code : JAPMC-OPM3SK-1
Vendor : YASKAWA Control Corporation
Parts list in the sample kit (all parts 5 set)
•JL-100A(ASIC, qty.5)
•H1102(transformer, qty. 10)
•DP83849IVS(PHY 2ch type, qty.5)
•1981836-1(connector, qty.10)
•BLM21BB201SN1D (Filter)

JL-101 sample kit
Product code : JAPMC-OPM3SK-2
Vendor : YASKAWA Control Corporation
Parts list in the sample kit (all parts 5 set)
•JL-101A(ASIC, qty.5)
•H1102(transformer, qty. 10)
•DP83849IVS(PHY 2ch type, qty.5)
•1981836-1(connector, qty.10)
•BLM21BB201SN1D (Filter)

Vendor : YASKAWA Control Corporation

MECHATROLINK-III Utility software



System configuration is defined by putting the icons(C1/C2 master, slave, Hub) and connecting them with lines in the canvas and setting the parameters such as communication data size, cable length, retry times, and so on. This software calculates the minimum transmission cycle time in that system.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