RTEX Master Test

Motor Business Unit
Appliances Company

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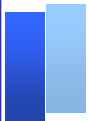
Revision	Date	Change Description
1	2010/2/18	Initial release
2	2012/2/11	Added description for timeout operation. Minor edits.

Introduction

This document is to provide minimum test items which must be completed before RTEX master product is released on the market.

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Test Items

Category	Item	Checking Description	Fig
Indication	RJ45 connectors	Labeling "TX" and "RX"	1
Indication	LEDs	Labeling "LINK" and "COM". Checking indicating specification.	1, 2
Physical Layer	Schematics and BOM for RTEX portion	Using designated parts etc.	
Physical Layer	Timing signal accuracy	Measuring XTXTIM signal accuracy with an oscilloscope.	1
Protocol	Sequence of power-on/off	In any order between Master and Slaves, no problems. If having problems, the manual must describe the conditions.	
Protocol	Communication data at start-up	Checking communication data with the logging tool. During servo-off, actual position must be set to command position.	3
Protocol	Change of slave connecting order	If cabling order changed, no problems. If having problems, the manual must describe the conditions.	
Protocol	Supported command and sequence	Checking command sequence with the logging tool.	
Protocol	Timeout operation	Servo-off is commanded to all servos when timeout detected.	4
Protocol	Motion profile	Checking wave form with PANATERM	
Protocol	Continuous motion with max. axes	During 2 hours continuous motion, no problems.	5

Fig 1 Circuit Block Diagram

"COM" (green and red)

2

Out Port

"LINK" (green)

In Port

"RX" RJ45

PHY |MII| ASIC
MNM1221

CPU

"TX" RJ45

32 or 16

XTXTIM

Hardware
Timer

XINTRX

IRQ

25MHz

Reset

Out Port

If software runaway,
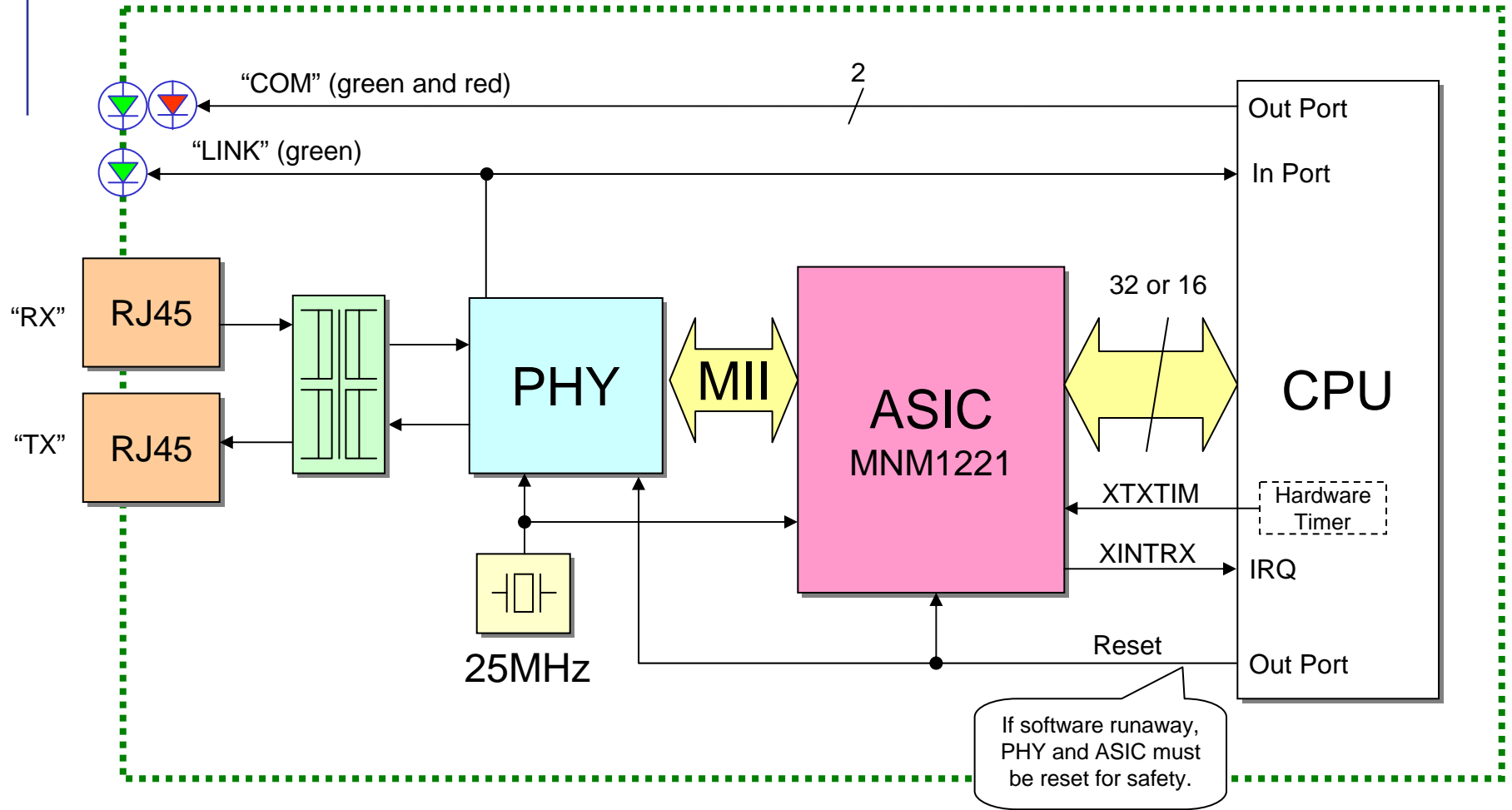PHY and ASIC must
be reset for safety.

Fig 2 "COM" LED Operation

"COM" LED which has red and green lights should be operated as follows:

Normally

Return value of ctrl_mnm1221_m()	"COM" LED operation
PH_INIT	Disappearance
PH_WAITING	Flashing Green (0.5s ON, 0.5s OFF)
PH_PREPARE	
PH_START	
PH_RUNNING	Solid Green

Error detected

Contents of error	"COM" LED operation
Timeout in RUNNING state	Flashing Red (0.5s ON, 0.5s OFF)
Mismatch of slave information (e.g. duplicate MAC-ID)	Solid Red

Notes:
- Solid Red means that a system reset is necessary to release the error.
- For ON, either green or red must be lighted.

Fig 3 Command at Start-up

Note: This time chart shows an example of cyclic position I/F.
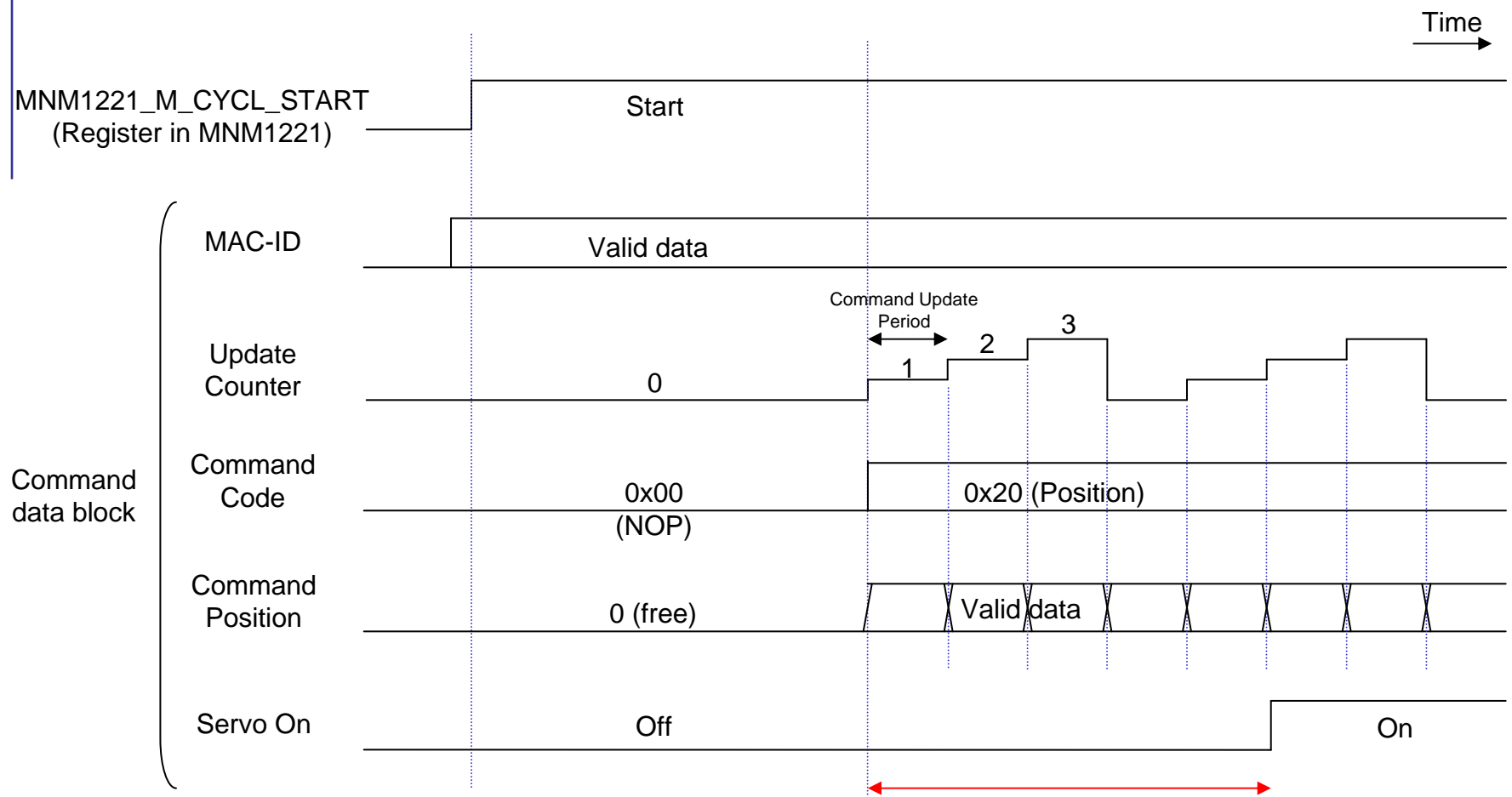
During Servo Off, Command Position should be set with Actual Position value of Response.

Fig 4 Operation at Timeout

Both controller and servo must detect timeout. If the controller detects timeout, it must command servo-off to the all servos for safety. Thus, at boundary of problem portion, the front servos (below A, B) are stopped by servo-off, and the rear servos (below C, D) are stopped by alarm.
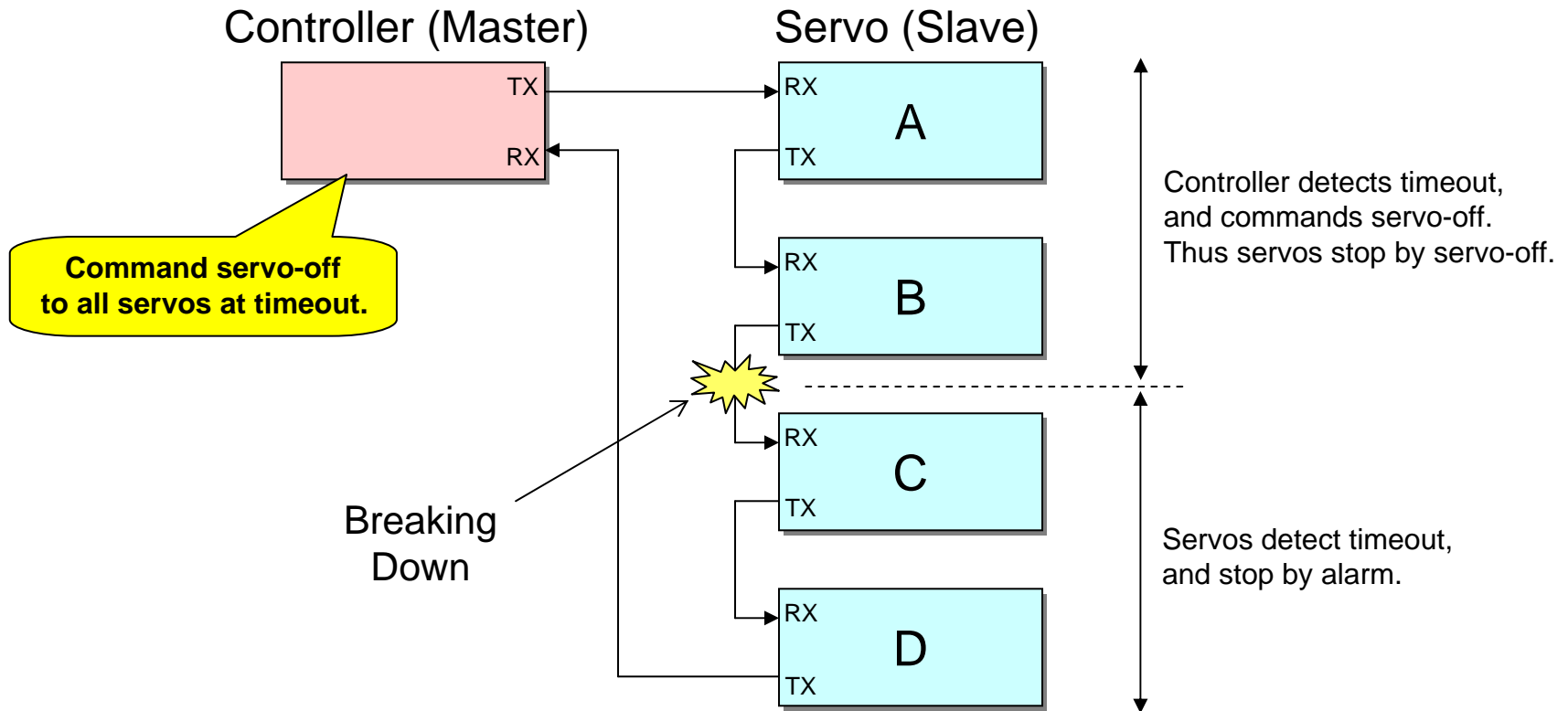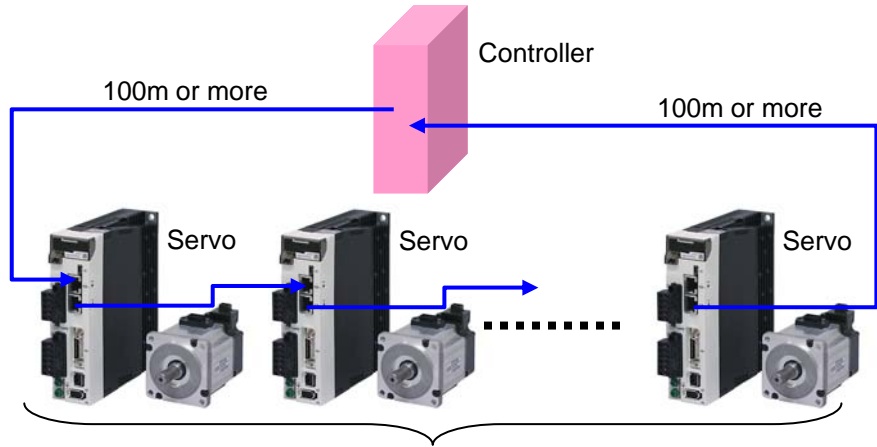

Controller (Master)

Servo (Slave)

Command servo-off to all servos at timeout.

Breaking Down

Controller detects timeout, and commands servo-off. Thus servos stop by servo-off.

Servos detect timeout, and stop by alarm.

Fig 5 Continuous Motion

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Method

Continuously operate servos of maximum axes the controller specifies.

Motion profile:	Any
Duration:	2 hours or more
Cable length between controller and servo:	100m or more
Cable length between servos:	Any

Indicating the sum of CRC errors on 7segment LED of all servos (Pr7.00=3), the number should be recorded for reference after the test.
Also, the sum of CRC errors the controller detects should be recorded.

Structure

Controller

100m or more   100m or more

Servo   Servo   Servo

• • • • • • • • •

Cables: CAT5e STP

Max. axes depends on the controller specification
(Not always 32)

Criteria

- No unusual motion.
- The controller has not caused alarm.
- The number of CRC errors is for reference.