Panasonic
INDUSTRY

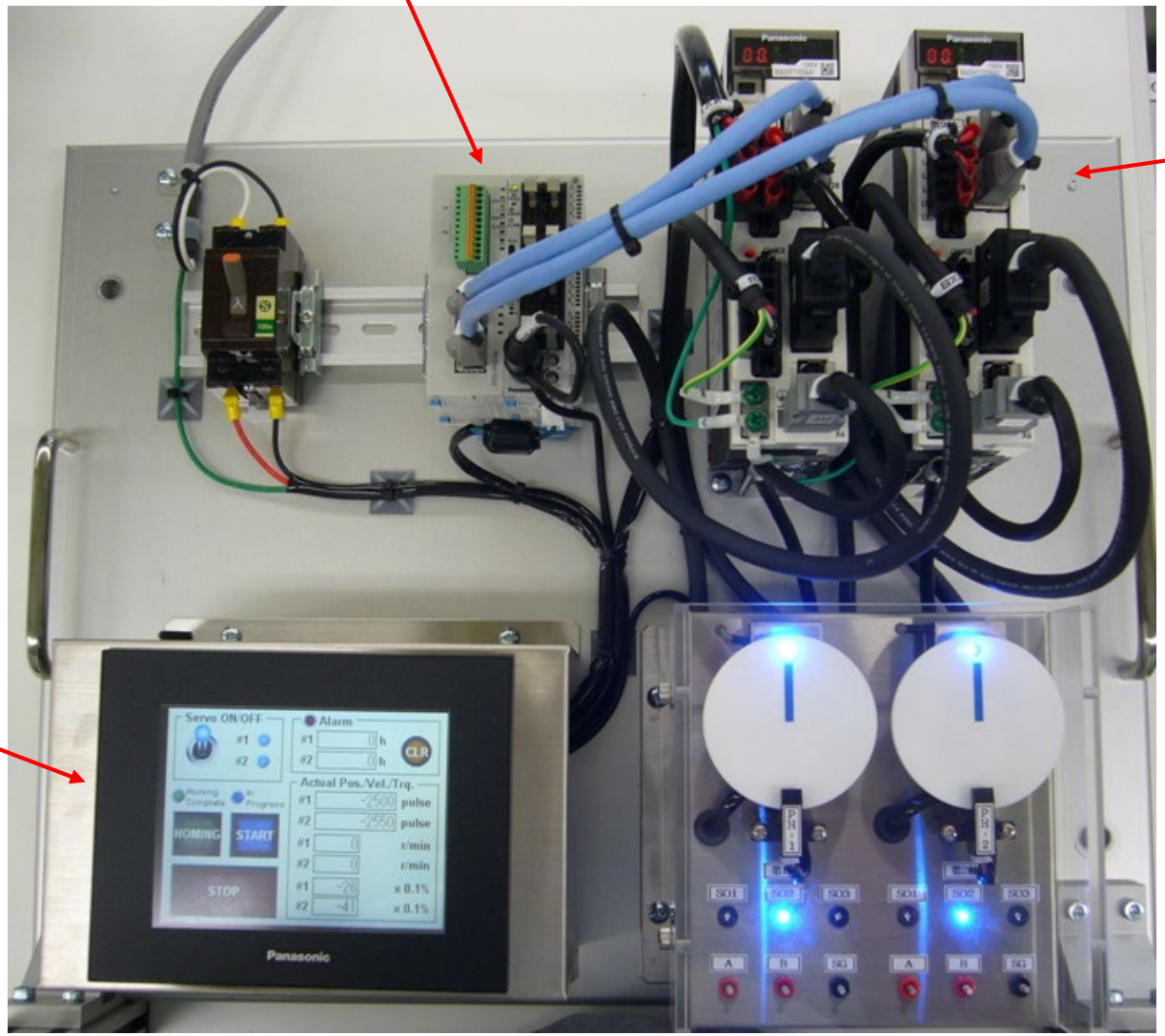
Example of Servo A5N Installation

April 1st, 2022

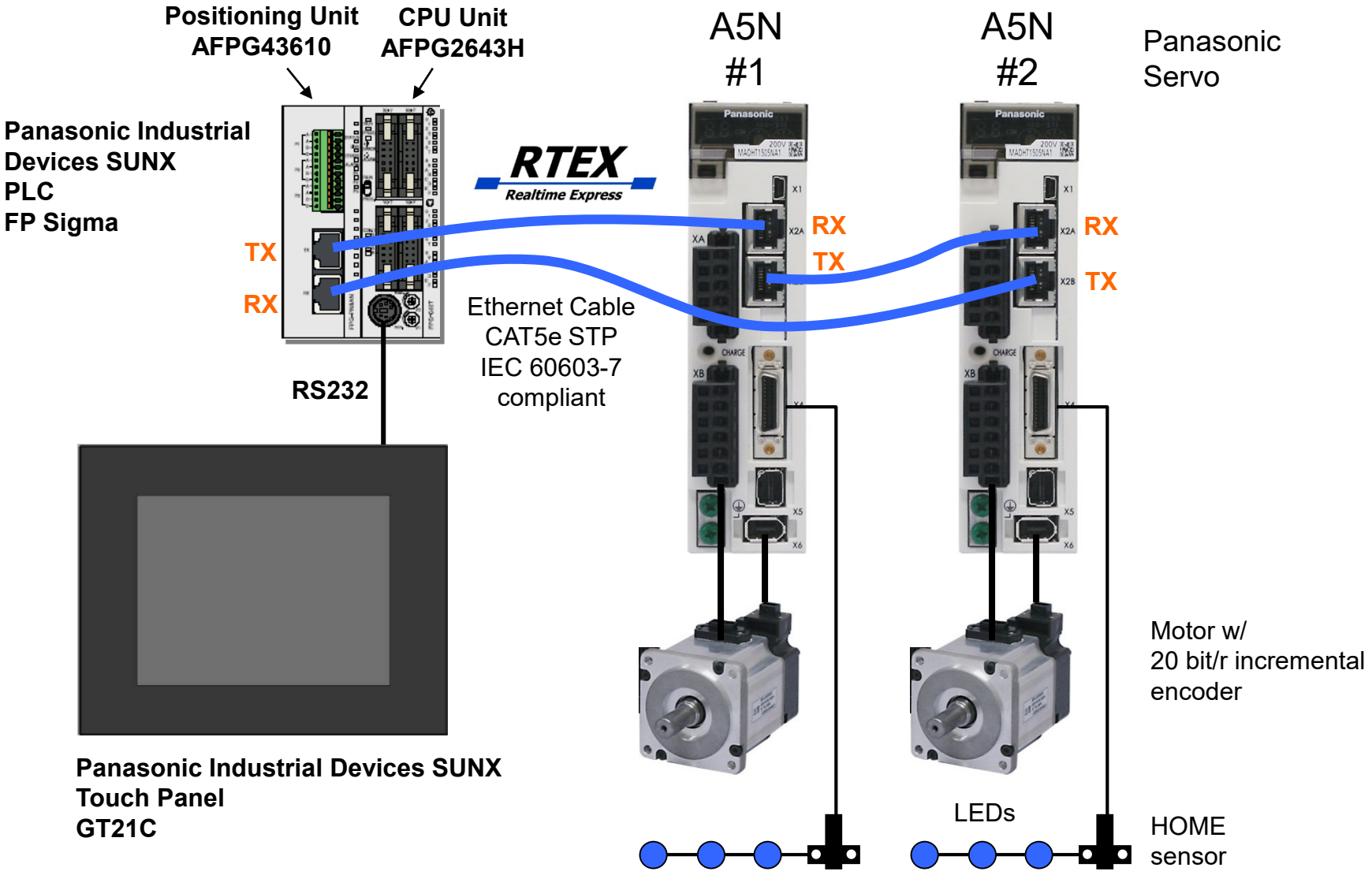
Panasonic Industry Co., Ltd.

System Overview

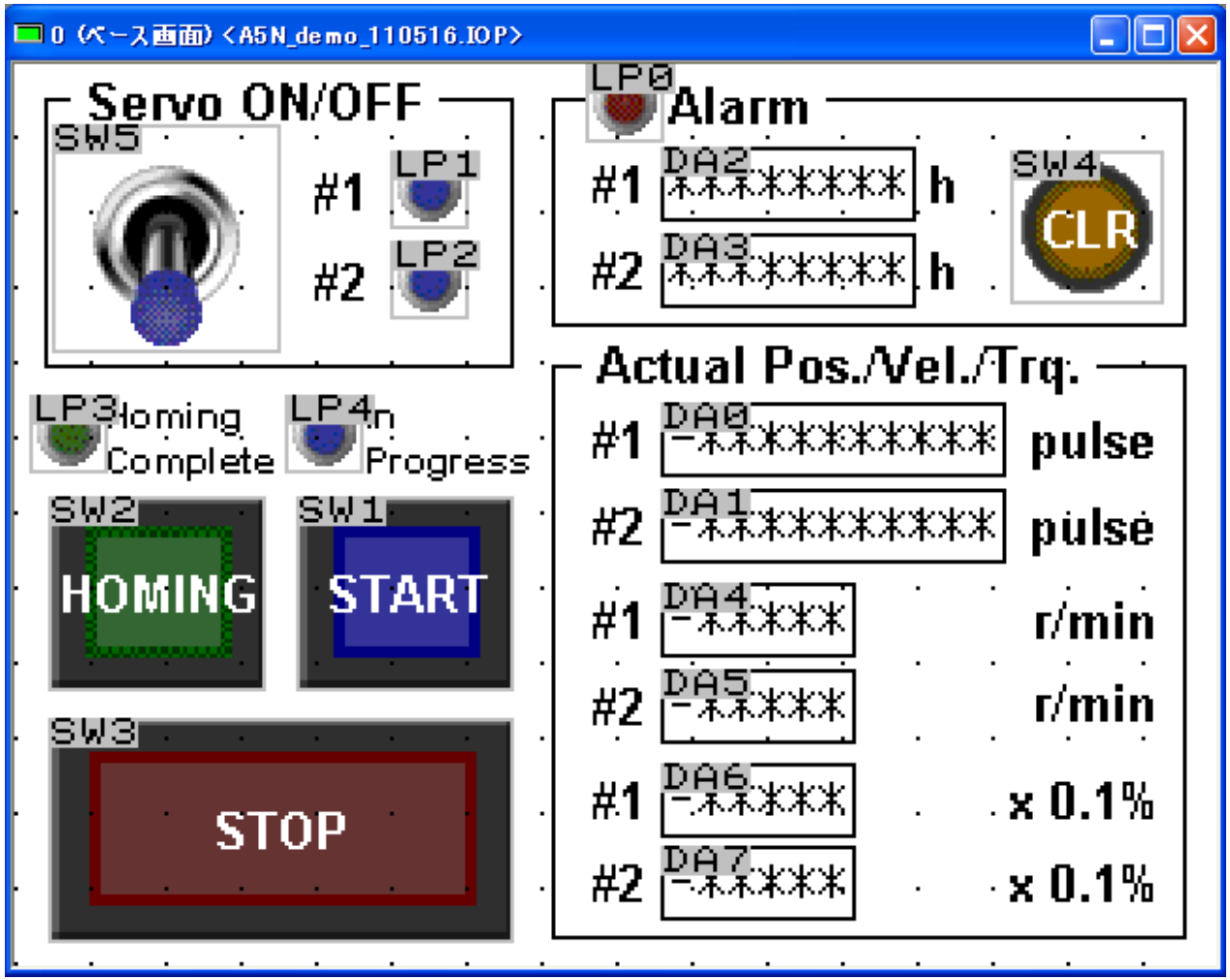
Example System



System Structure



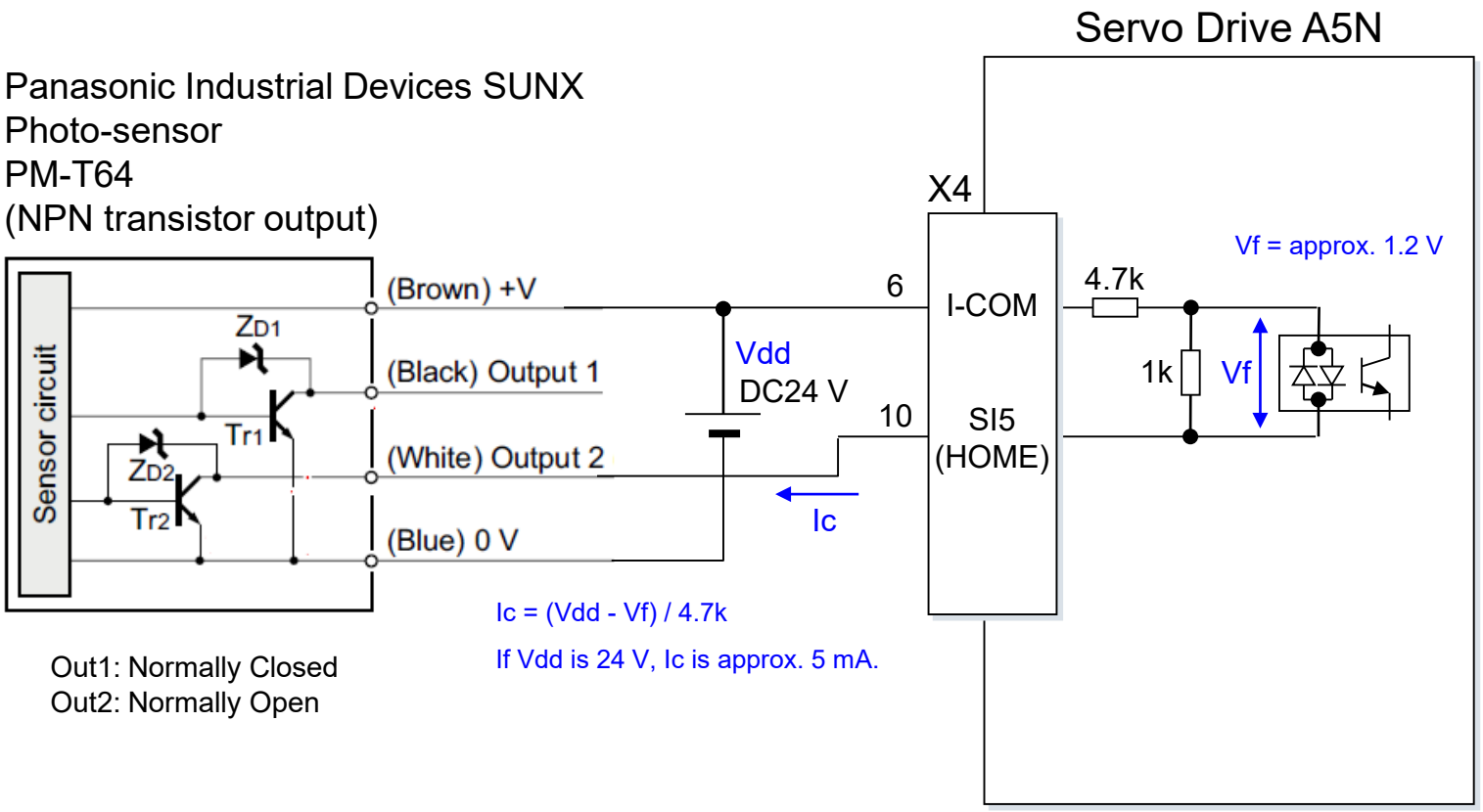
HMI on Touch Panel



Wiring

HOME Sensor Wiring

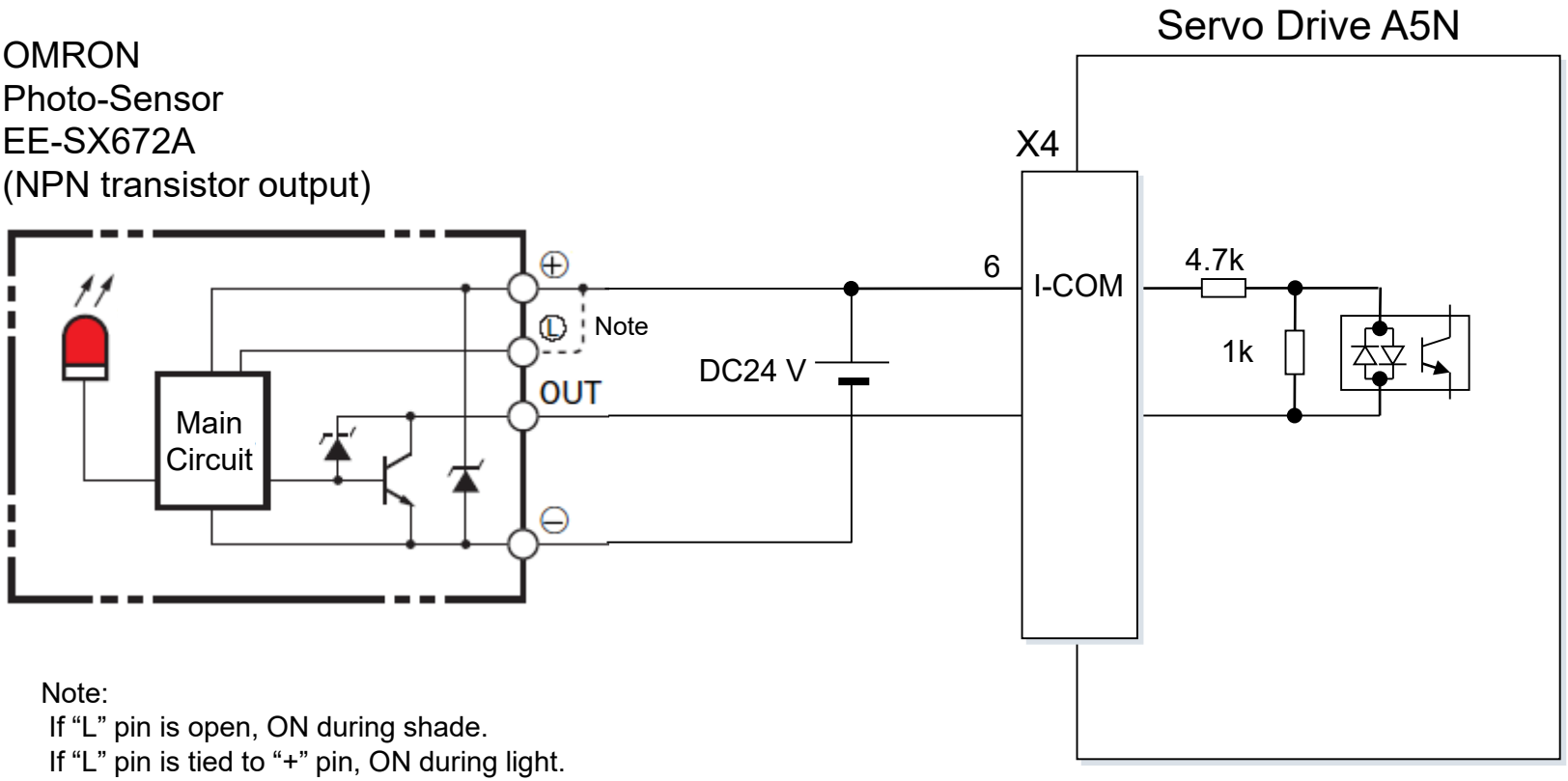
Panasonic Industrial Devices SUNX
Photo-sensor
PM-T64
(NPN transistor output)



Out1: Normally Closed
Out2: Normally Open

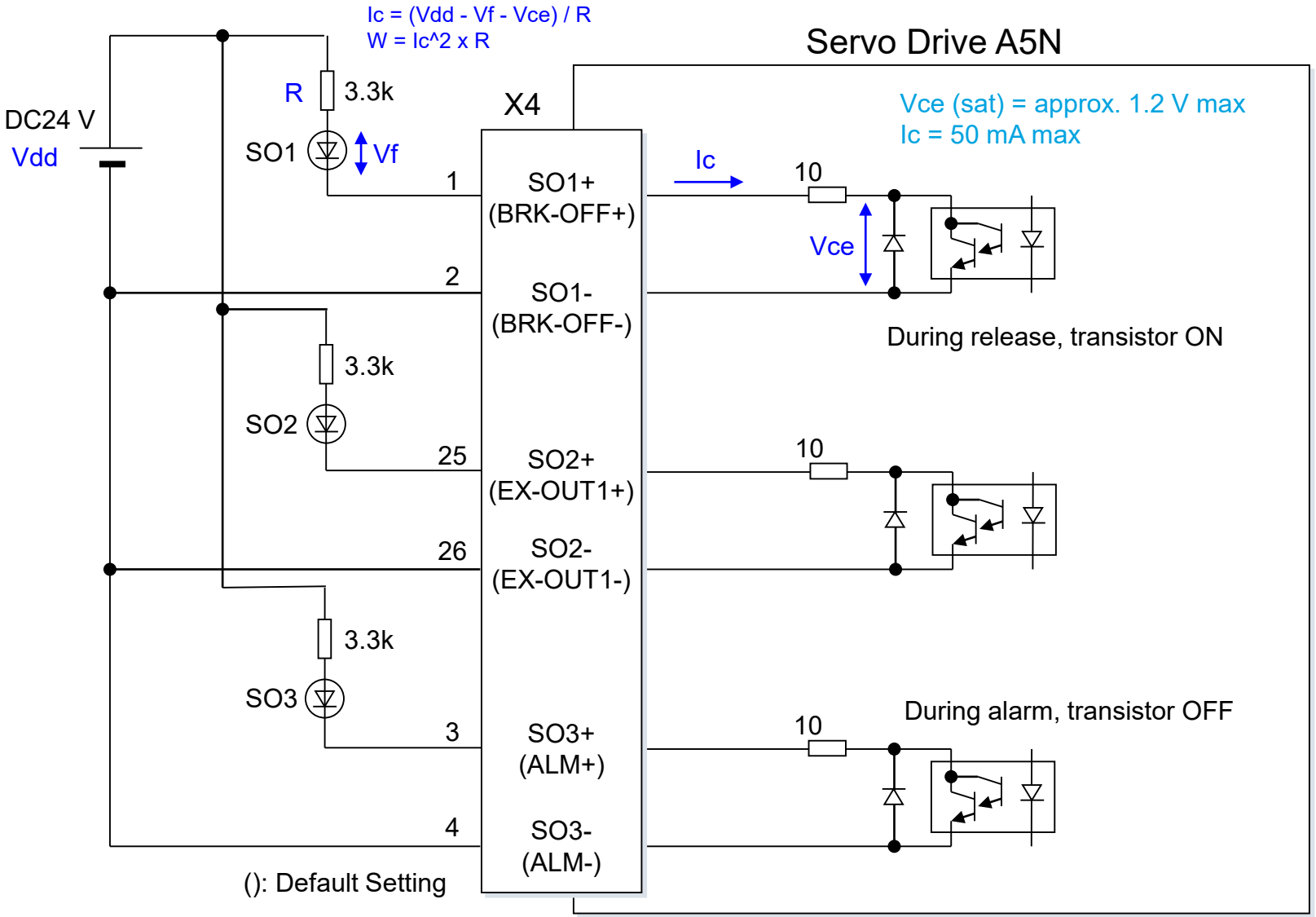
Another Sensor Case

OMRON
Photo-Sensor
EE-SX672A
(NPN transistor output)



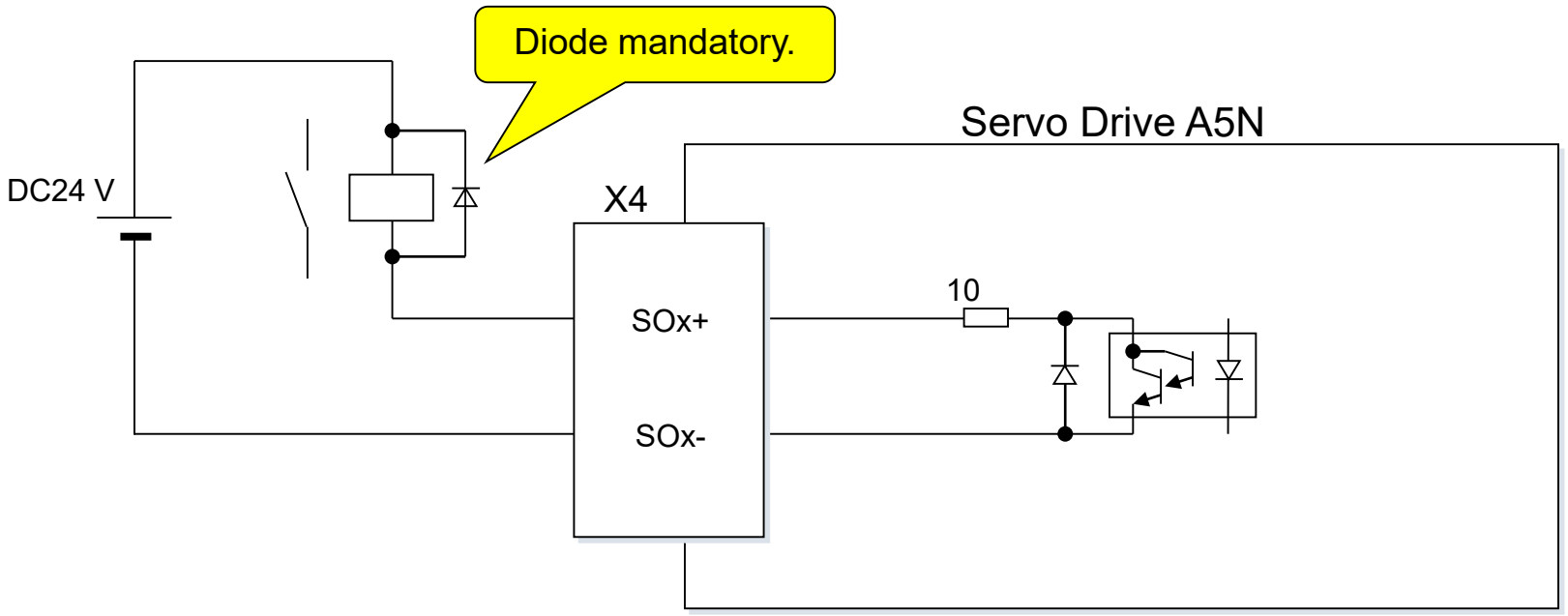
Note:
If “L” pin is open, ON during shade.
If “L” pin is tied to “+” pin, ON during light.

LEDs Wiring



Note: For the wattage of R, sufficient margin is required.

Relay Wiring Case

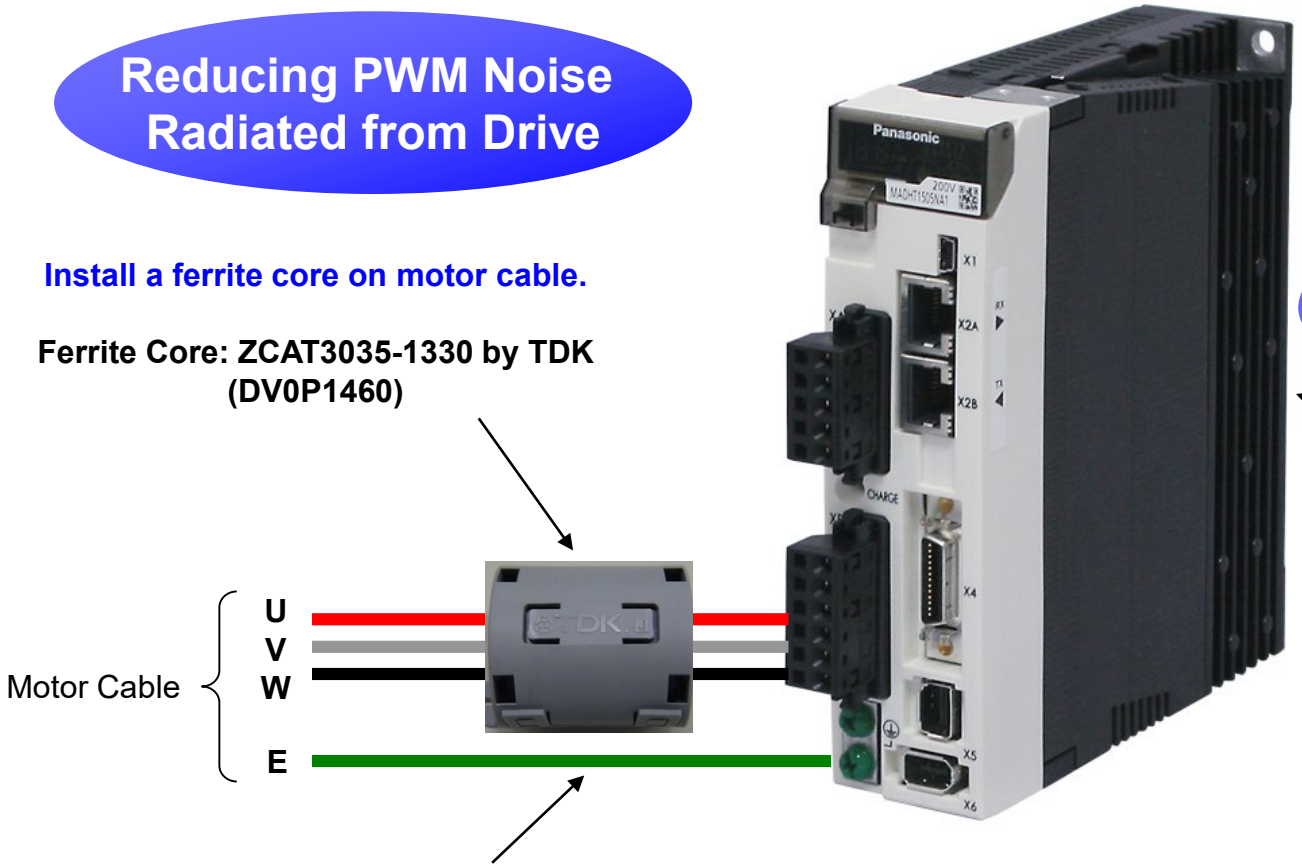


Counter-measures for Noise

Reducing PWM Noise Radiated from Drive

Install a ferrite core on motor cable.

Ferrite Core: ZCAT3035-1330 by TDK (DV0P1460)



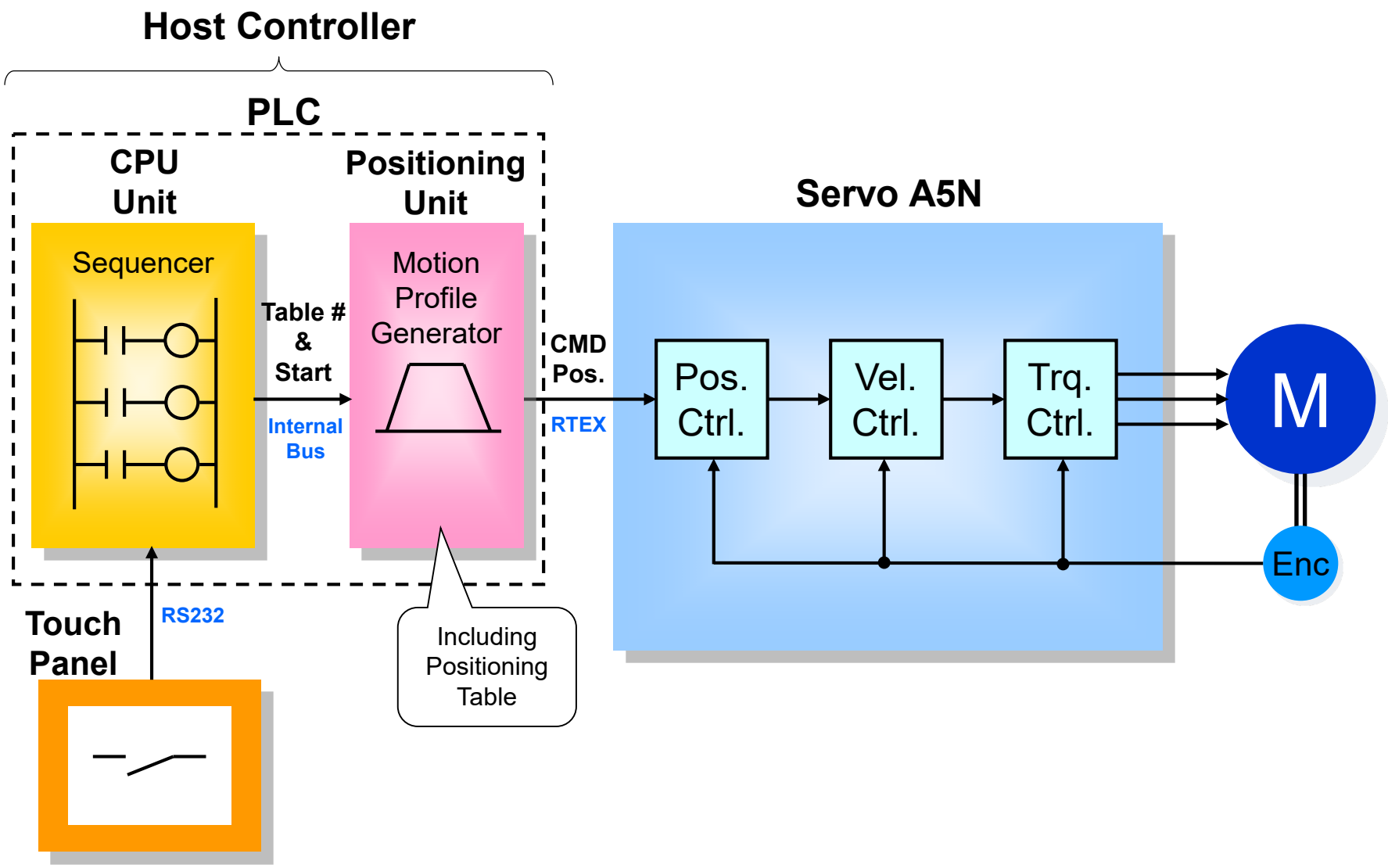
Do not install it on E.

Stable Frame Ground

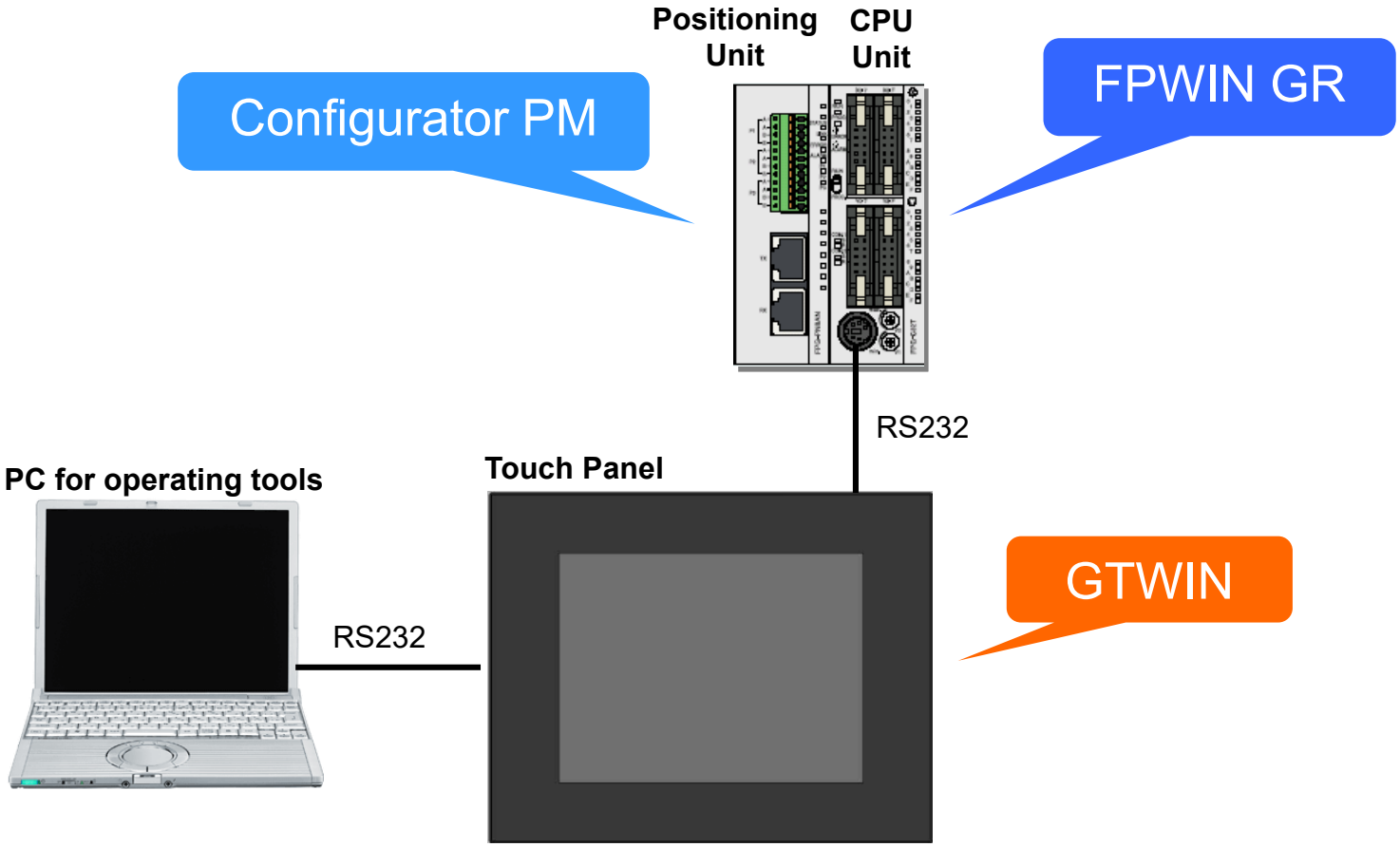
Make the back of chassis tightly contact earthed metal frame. The surface of the metal frame must be kept conductive.

Host Controller Programming

Block Diagram

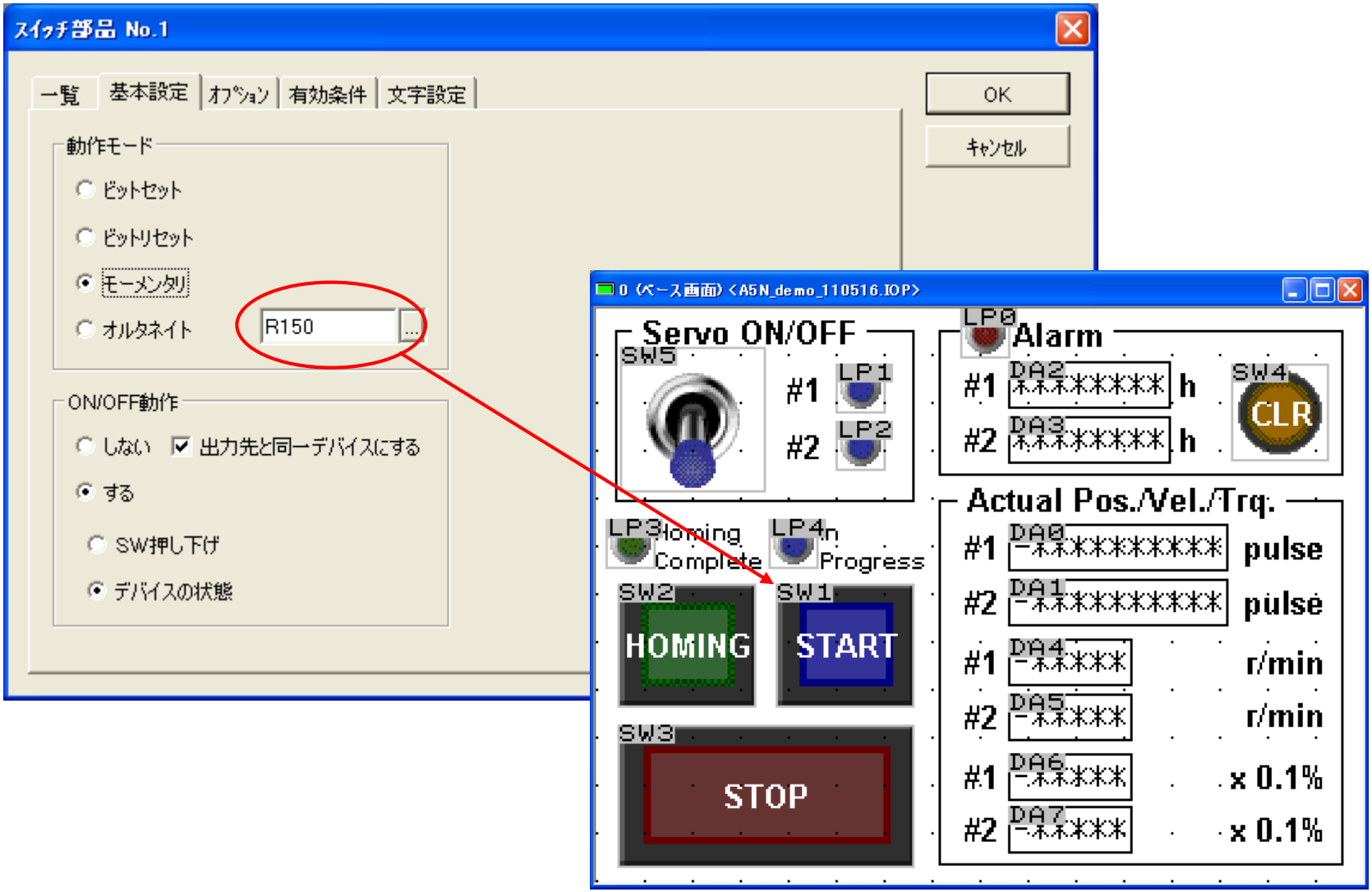


Programming Tools for Host Controller



Touch Panel Configuration

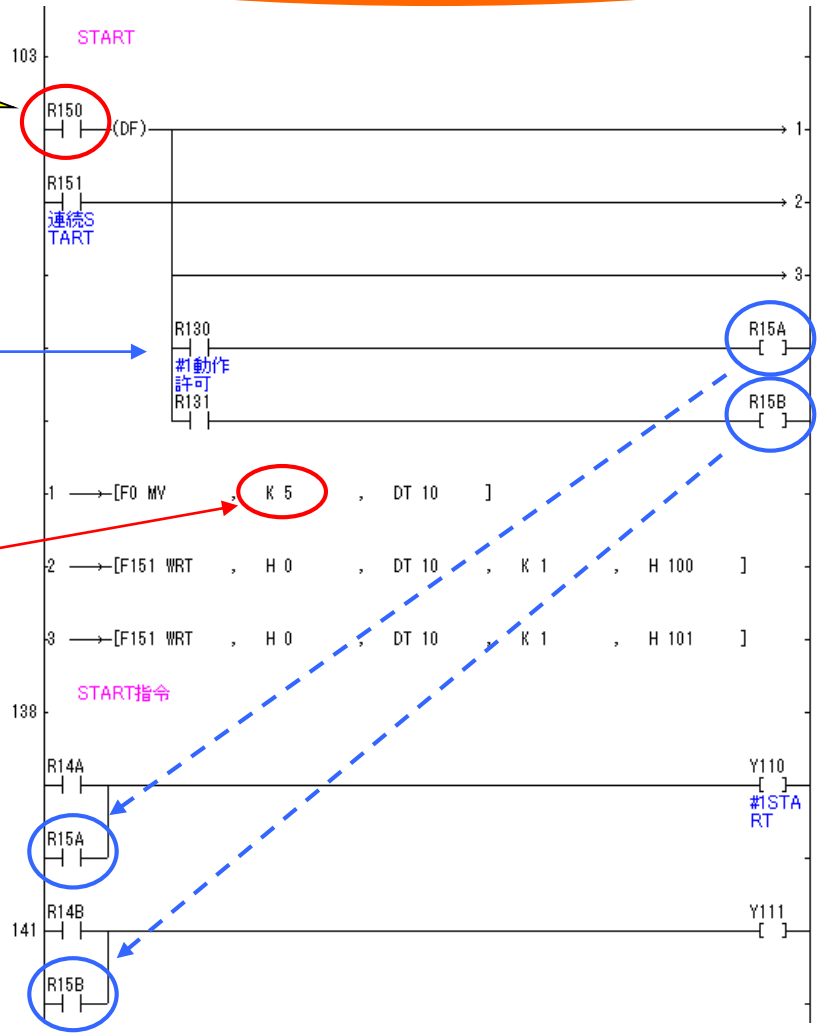
An example of start switch.



PLC Programming

Basically, start after setting table No.

Start SW on the Touch Panel



R130 and 131 ON conditions:
- RTEX established
- Servo-ON
- Not in motion

Table No.

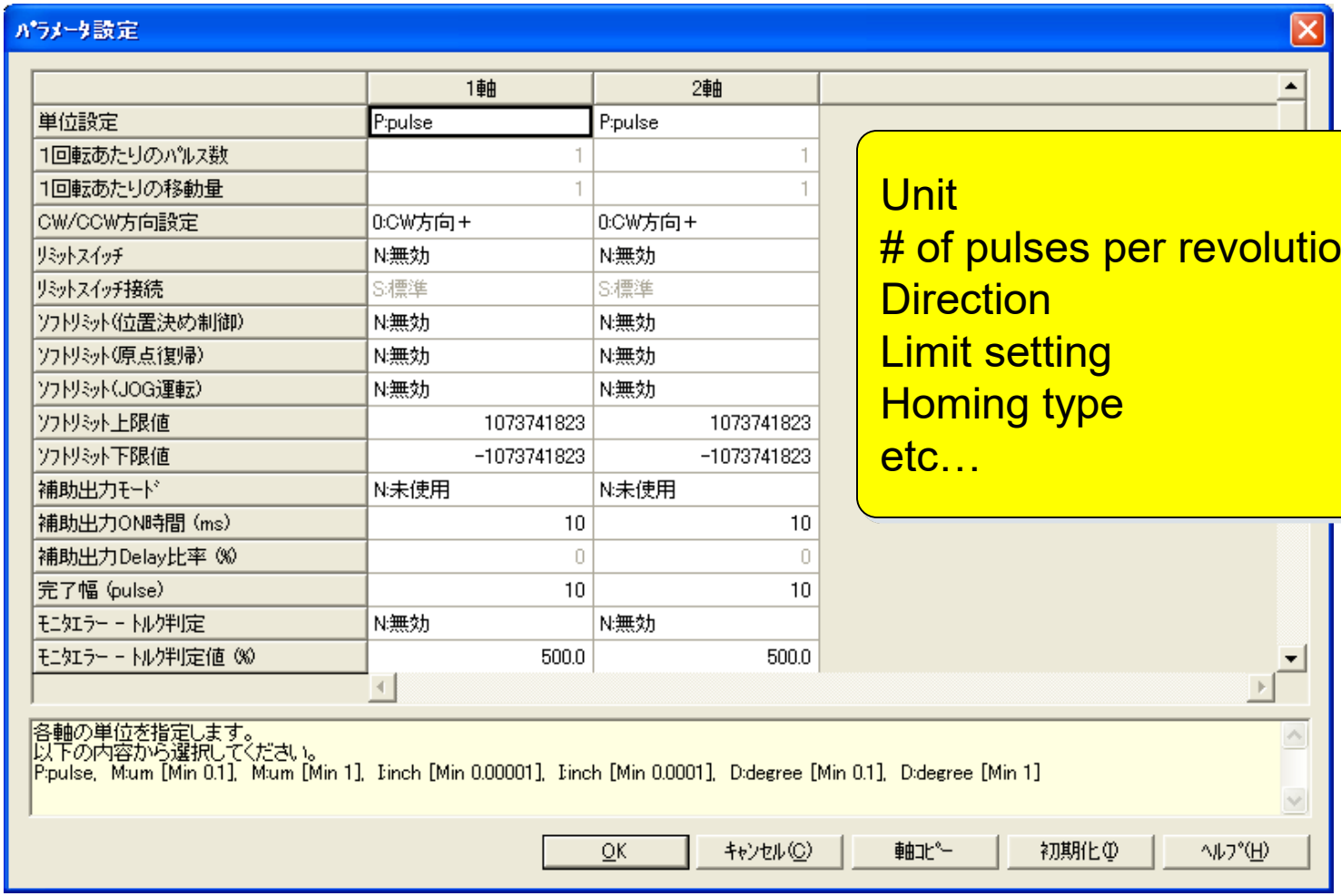
Setting table No. into shared memory.

Servo #1 and #2 START

Note:
R151, R14A and R14B are used for another program.

Positioning Unit Configuration (1)

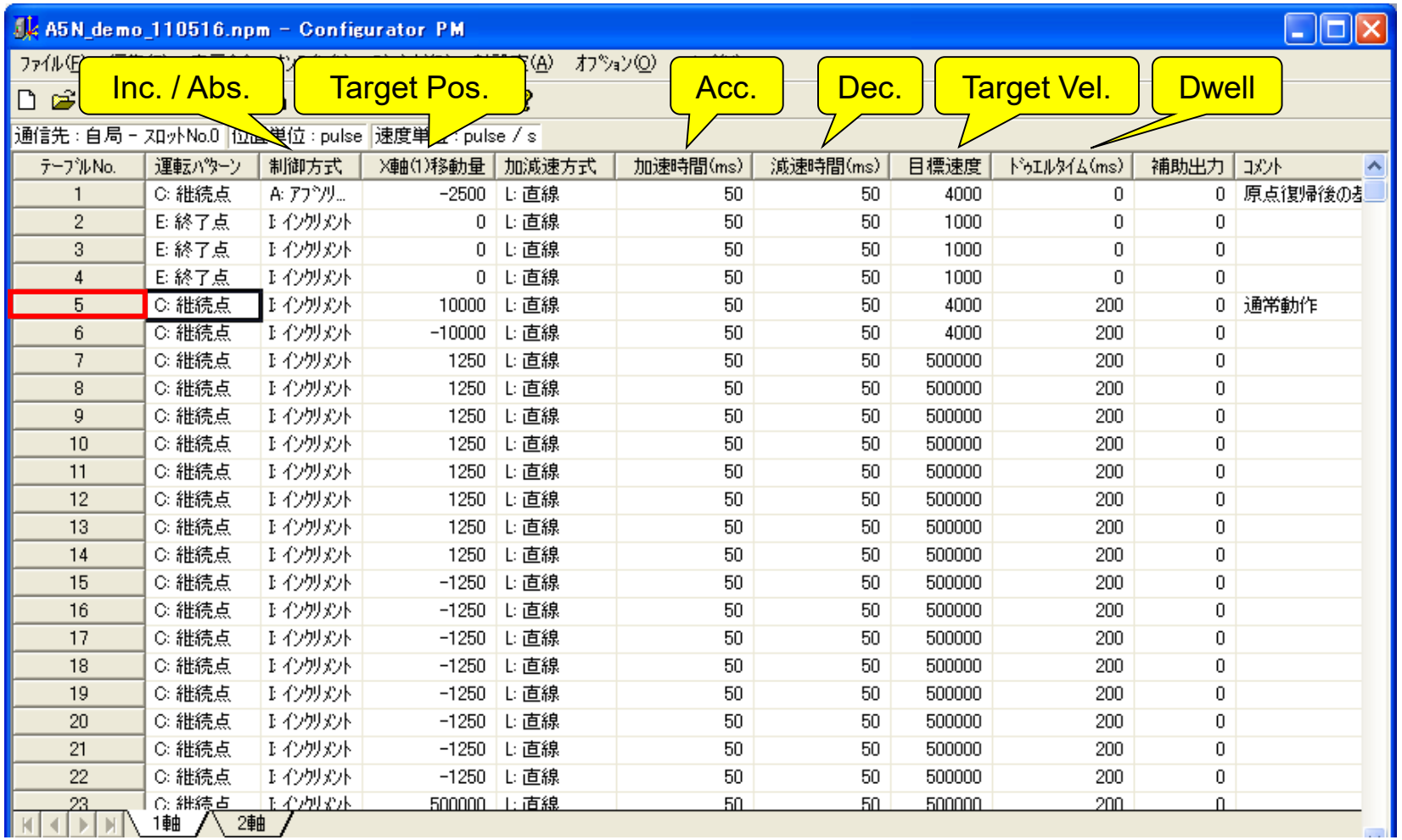
Parameters of Positioning Unit:



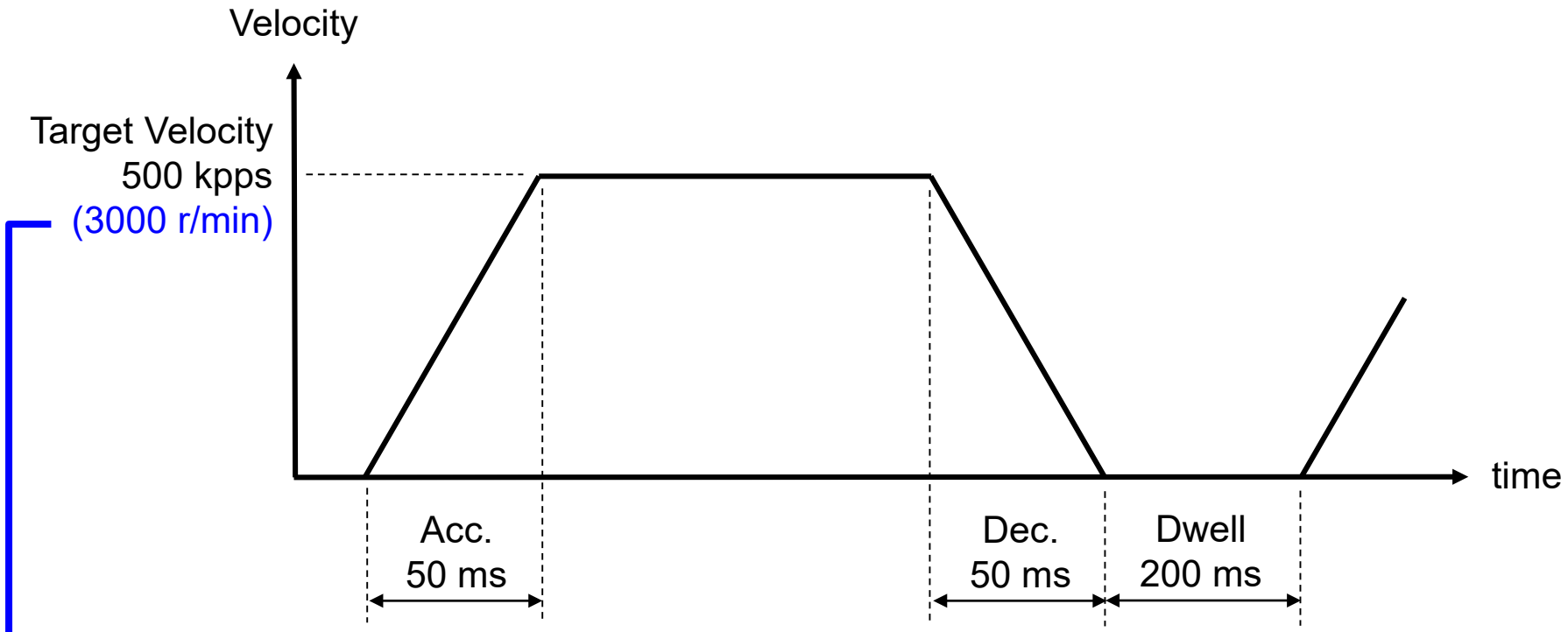
Unit
# of pulses per revolution
Direction
Limit setting
Homing type
etc…

Positioning Unit Configuration (2)

Positioning Data Table:



Motion Profile Example



A5N parameter setting is needed as follows:

Electronic Gear Setting: $\frac{1{,}048{,}576\ (20\ \text{bit})}{10{,}000}$

(Pr0.08 = 0, Pr 0.09 = 0, Pr 0.10 = 10000)

Servo Settings

A5N Front Panel

7-segment LED

LINK LED (Green)

LINK	Network State
OFF	Wiring Not Link
Solid Green	Link

COM LED (Green / Red)

COM	Network State
OFF	Initial
Blinking Green	In Configuration
Solid Green	Established
Blinking Red	Error
Solid Red	Serious Error (Reset needed)

Address Setting RSW
Range: 00 to 31
Value depends on the controller specification.

Node Address

Set the value according to Host Controller specification.
In FP Sigma of 2-axis type, set #1 and #2.

Note: Some Host Controllers need value corresponding to RTEX cable-connecting order.

RTEX Period

FP Sigma needs Update Period 1 ms, Com. Period 0.5 ms and 16-byte mode.

Pr7.20	Pr7.21	Command Update Period	Com. Period	Max # of Axes		Available Control Mode	Full-Closed Cont. (Note)
				16-byte mode Pr7.22 bit0=0	32-byte mode Pr7.22 bit0=1		
6	1	1.000 ms	1.000 ms	32	16	PP, CP, CV, CT	Available
3	2	1.000 ms	0.500 ms	32	16	PP, CP, CV, CT	Available
3	1	0.500 ms	0.500 ms	32	16	PP, CP, CV, CT	Available
1	1	0.166 ms	0.166 ms	10	-	CP, CV, CT	-
0	2	0.166 ms	0.083 ms	5	-	CP, CV, CT	-

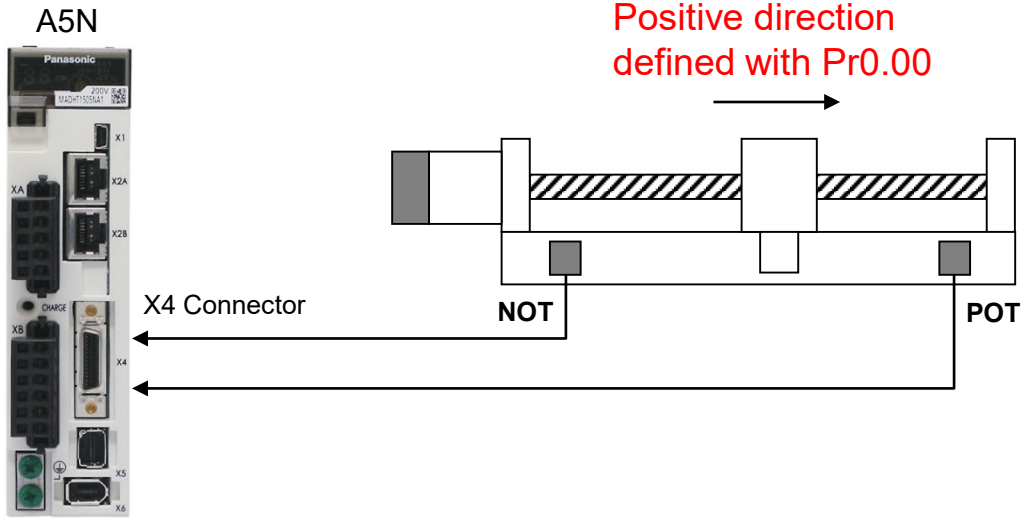
Note: Full-closed control Pr0.01 = 6, Semi-closed control Pr0.01 = 0

Using PANATERM, the command wave-form should be checked.
If the period is mismatched, the wave-form is disturbed.

Limit Sensors

According to Host Controller specification, set relevant parameters properly as well as wiring.

Normally Pr5.04 is set to 1 (disable) because Host Controller operates limit motion.



Response byte 3 inside RTEX data block:

	bit1	bit0
Pr7.23 bit3=0	POT	NOT
Pr7.23 bit3=1	NOT	POT

Bit assignment is changeable with Pr7.23.

A5N Parameter Setting

FP Sigma needs the following parameter settings.
There are some parameters FP Sigma changes automatically, and do not touch them.

#	Name	Setting Value	Description
0.00	Rotational direction	Do not touch.	FP Sigma operates it.
0.01	Control mode	0	Semi-closed control
0.08	Number of command pulses per motor revolution	0	Set by Pr0.10.
0.09	Numerator of electronic gear	0	Set by Pr0.10.
0.10	Denominator of electronic gear	(e.g.)10000	Set value of pulses per 1 rev. (Note1)
5.04	Over-travel inhibit input	1	Disable
5.21	Selection of torque limit	Do not touch.	FP Sigma operates it.
7.20	RTEX communication cycle	3	0.5 ms
7.21	RTEX command updating cycle ratio	2	Update : Com. = 2 : 1
7.22	RTEX function extended 1	0	16-byte
7.23	RTEX function extended 2	Do not touch	FP Sigma operates it.
7.25	RTEX speed unit	1 (Note2)	pulse/s

Notes:
1. If necessary, with adjusting position command filters (Pr2.22, Pr2.23), smooth out the position command after the electronic gear through.
2. If required to monitor speed with r/min, set Pr7.25 to 0.

Start-UP

Power-ON Sequence

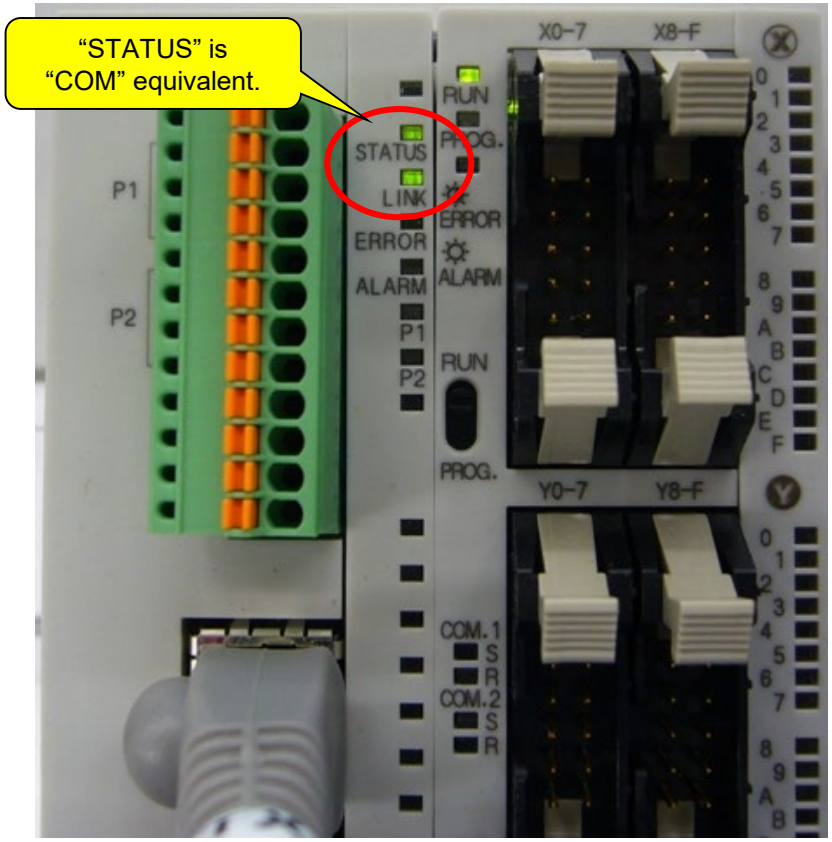
It depends on Host Controller specification.
FP Sigma needs the following order.

1. I/O devices connected to PLC
2. Servo drives
3. PLC FP Sigma

LED Checking in Power-ON

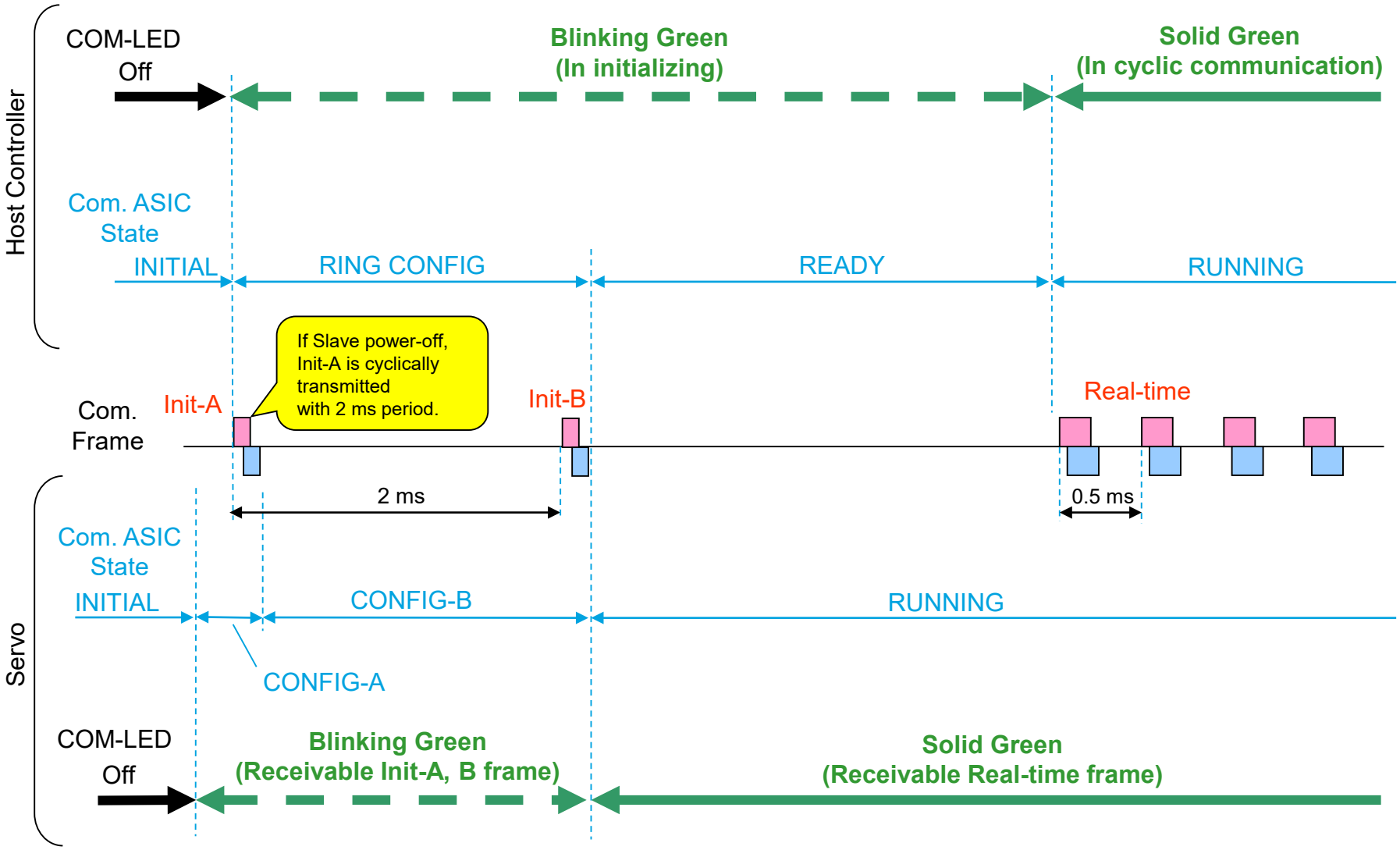
When RTEX established successfully, both LINK and COM indicate solid GREEN.

PLC “FP Sigma”



A5N

COM Behavior at Start-up

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