Version 04/Dec/2023

Confidential

IoT Operation monitoring system specifications Documentation EN Blueprint for JATH

Blueprint

R1

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Revision History

Date	Version	File name	Details
04/Dec/2023	R1	IoT Operation monitoring system specifications Documentation EN Blueprint for JATH	First edition

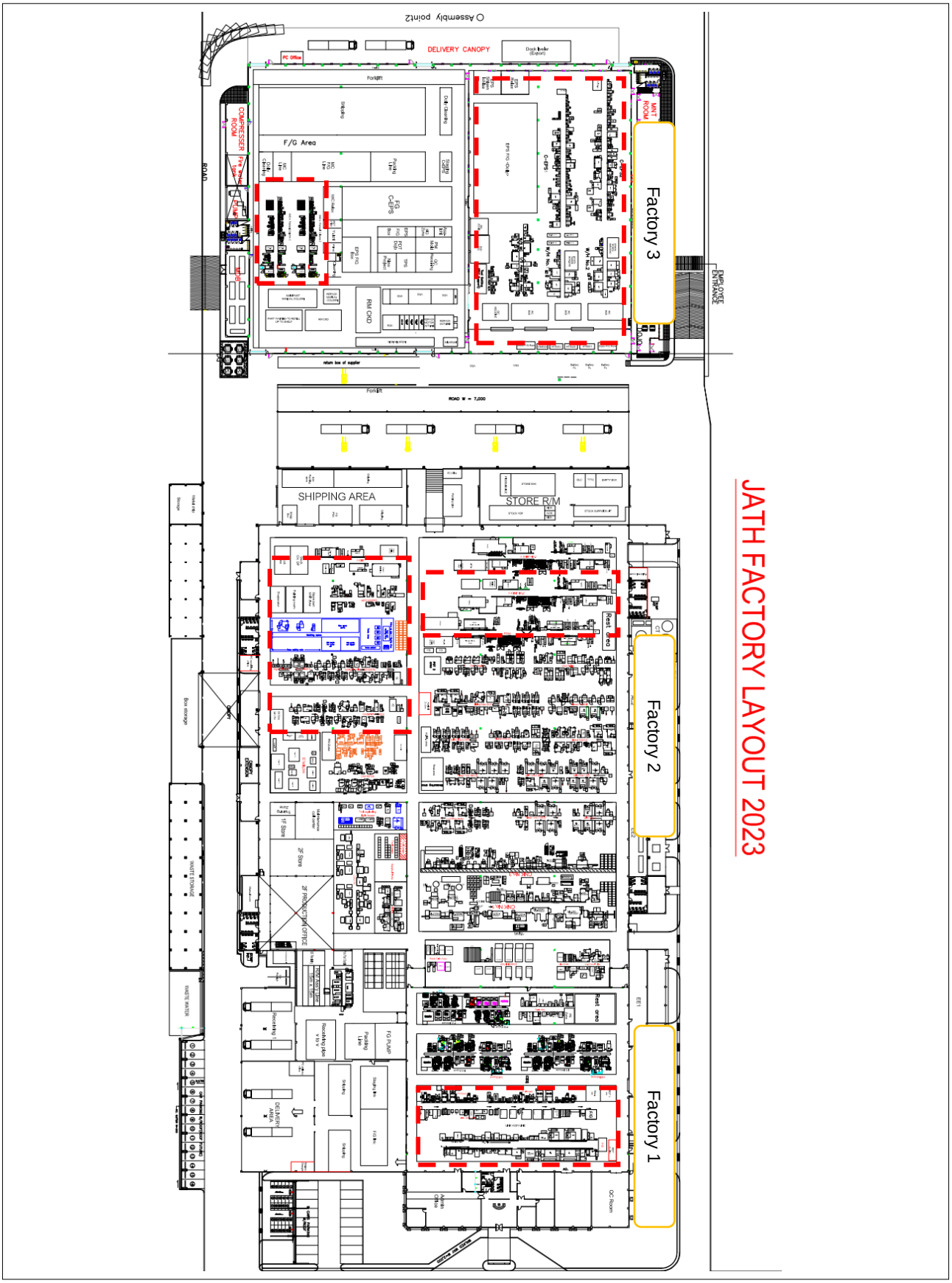
■ Contents

1. Overview

We propose operation management of Final process. This allows the customer to proceed while analyzing the cause of why the equipment stopped. In addition, cycle time and takt time can be acquired, so analysis can be performed according to product information. If customer install specific software on customer's smartphone, customer will be able to access the touch display.

2. Overall configuration diagram

Overall configuration diagram (Hardware configuration)



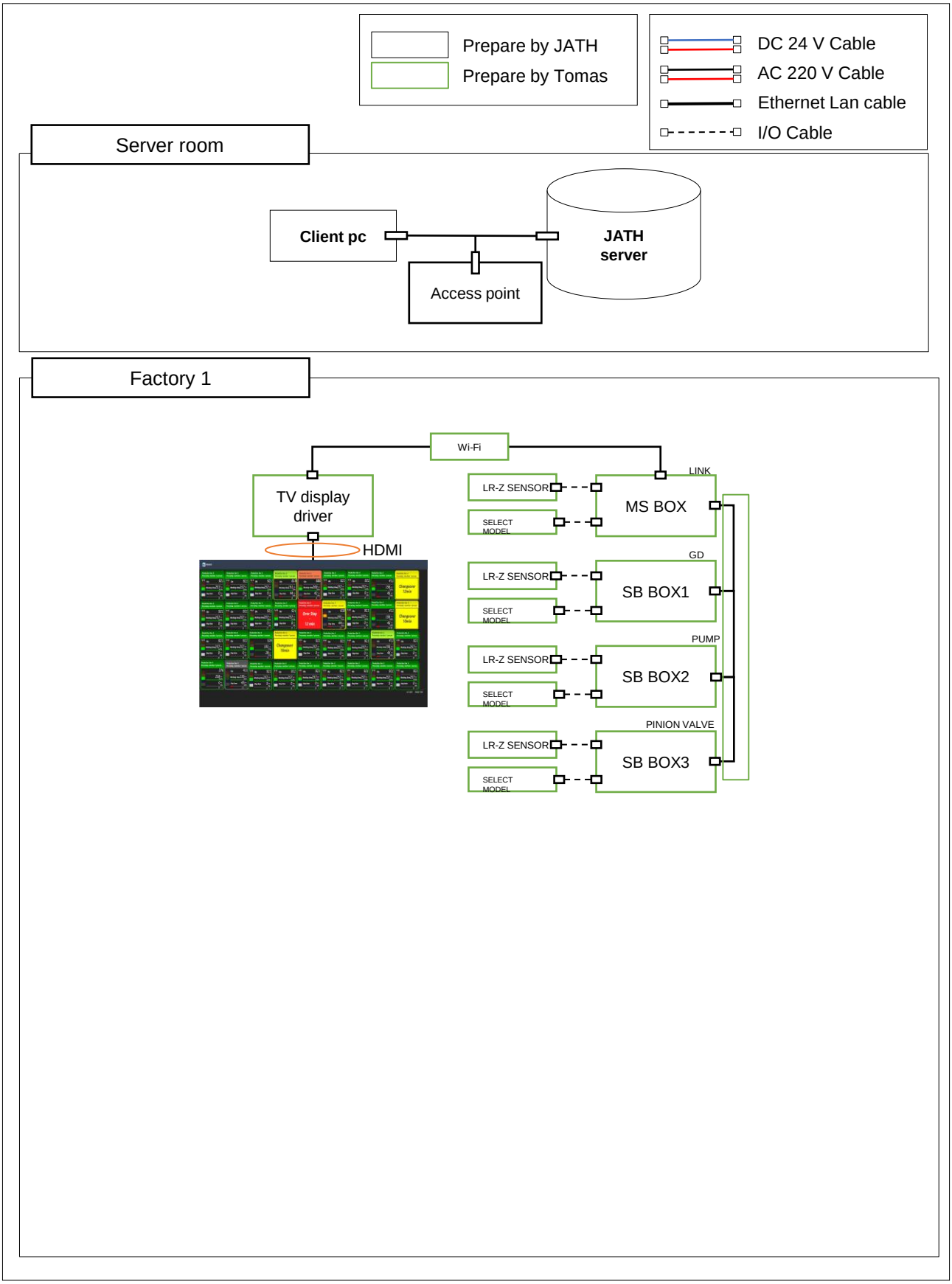
2. Overall configuration diagram

Overall configuration diagram (Hardware configuration)

#	Item	Qty	IP Address	Preparation By
1	Server PC for Record data window server	1		JATH
2	PLC Keyence KV-8000	1	192.168.XXX.10-13	Tomas
3	KV-XD02	1	192.168.XXX.20-30	Tomas
4	KV-EP02	1	192.168.XXX.30-50	Tomas
5	KV-8XTD	1		Tomas
6	KV-NC16EX	5		Tomas
7	VT5-W10	8	192.168.XXX.100-120	Tomas
8	TV-DISPLAY DRIVER	3	192.168.XXX.150-160	Tomas
13	Terminal Box	14		Tomas

2. Overall configuration diagram

Overall configuration diagram (Hardware configuration)



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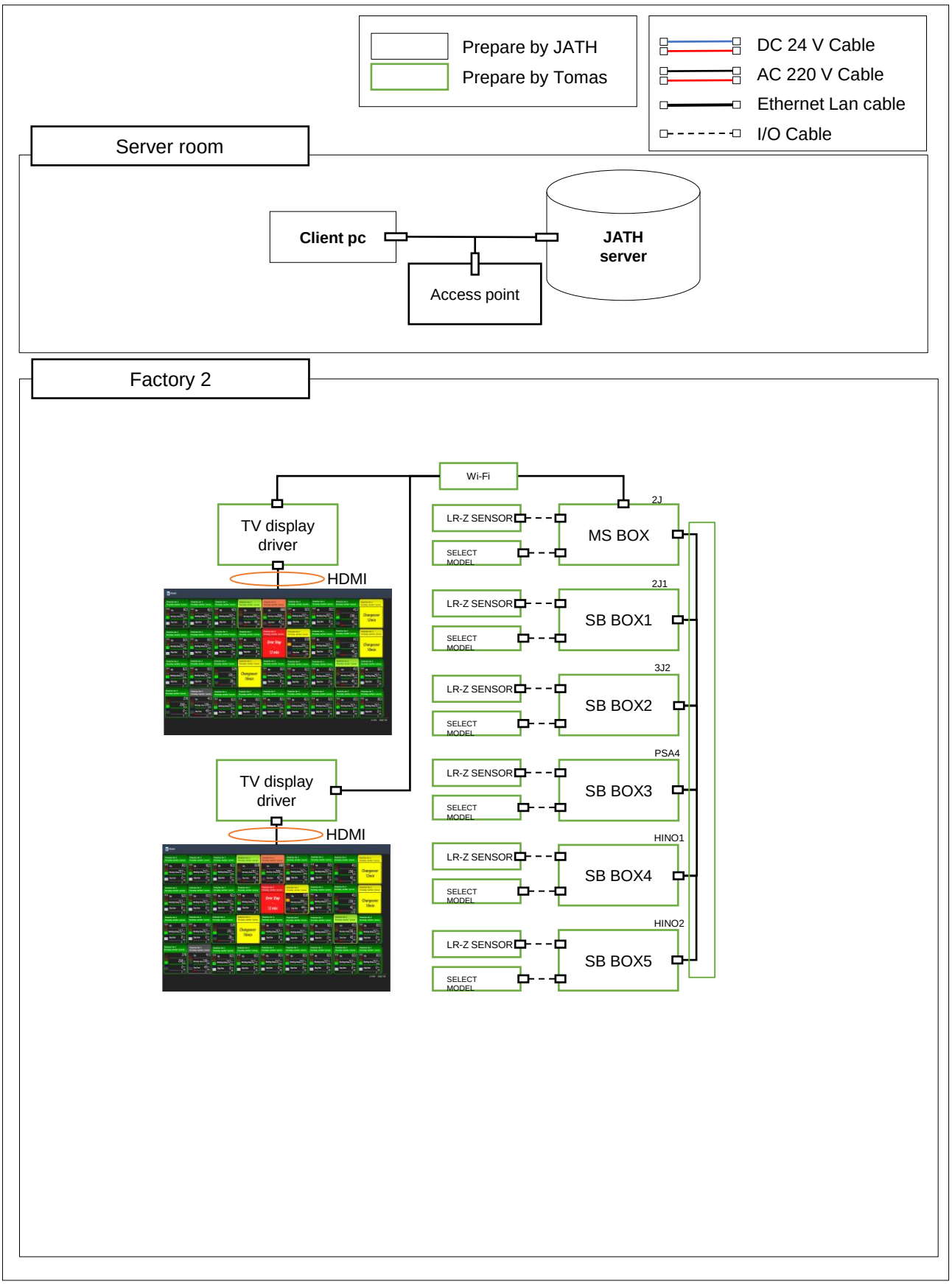

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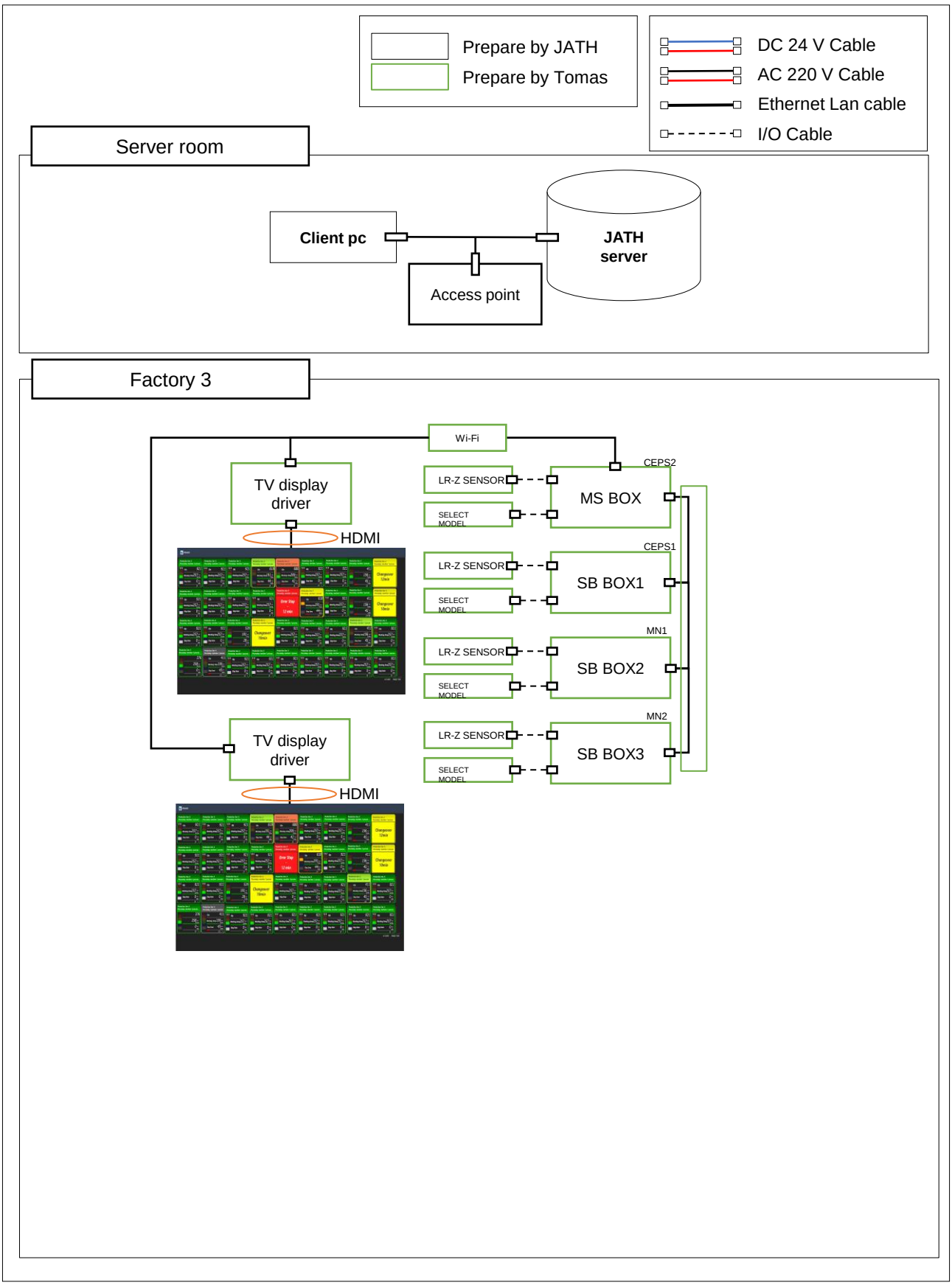
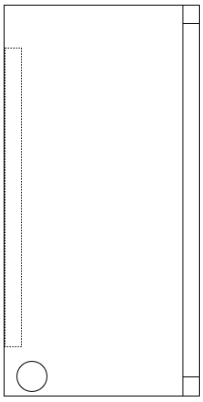
Overall configuration diagram (Hardware configuration)



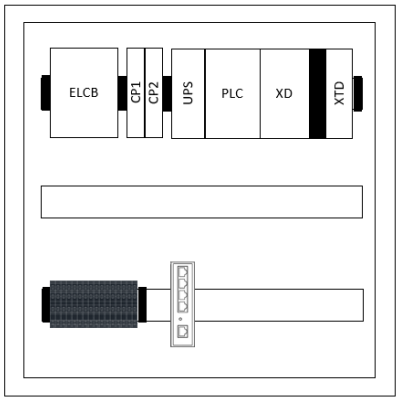
3. Operation Box spec

Master box

Front



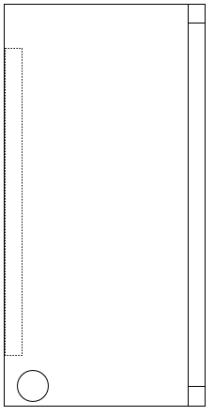
Side



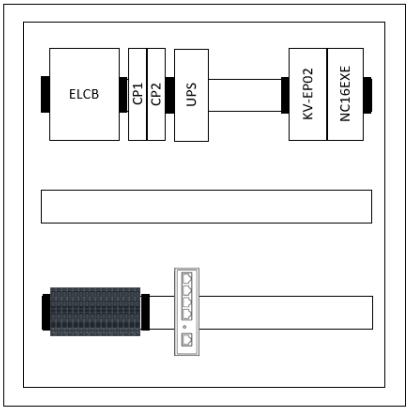
In side

Slave box

Front



Side

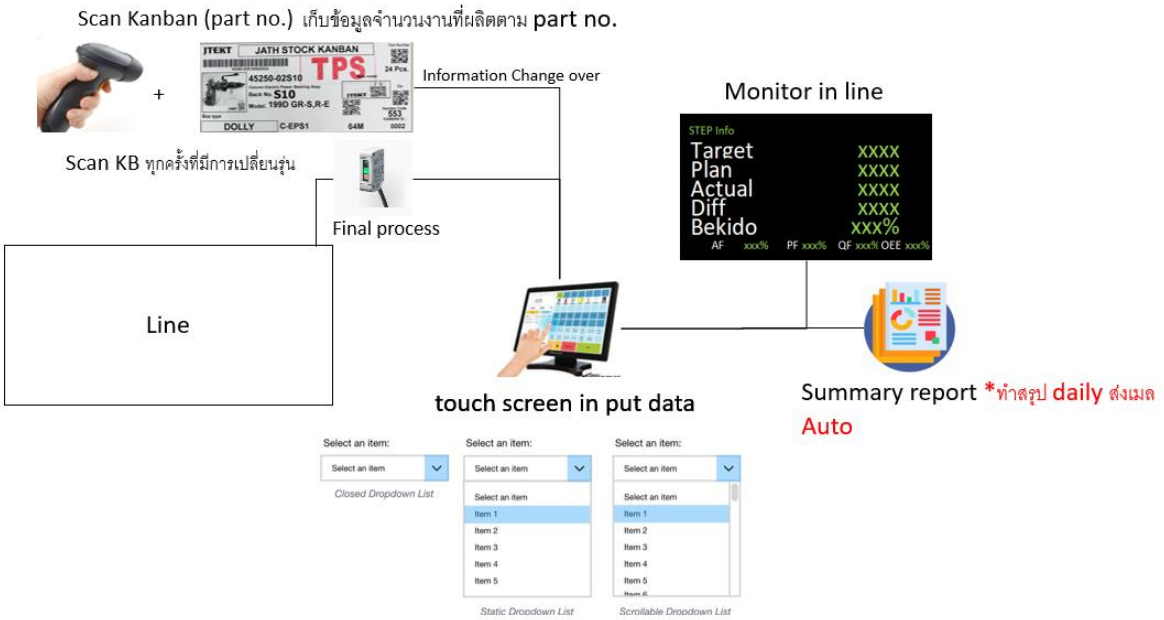


In side

4. Calculation function

Data from JATH

Operation flow



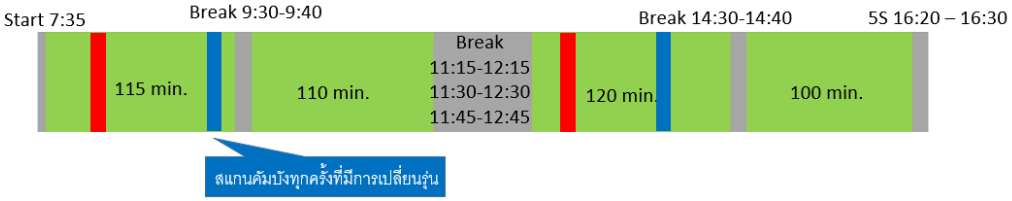
เลือกข้อมูล dropdown (Machine Stop , Quality , **C/O** , retest, Other พิมพ์เพิ่มนอกเหนือจาก dropdown)

*ในอนาคตสามารถเพิ่มหัวข้อเองได้

Breakdown monitor and Input Data

วิธีลงข้อมูล breakdown

Working time STD 445 min/shift



1.งานไม่ออกตาม CT.ที่กำหนด program alarm ให้ใส่ปัญหา

2.Leader ใส่ปัญหาตามตัวเลือก (real time หรือ ย้อนหลังได้)

touch screen in put data

- M/C breakdown
- Quality , rework , retest
- Change over
- Change Tools
- Other

3.Programจะหยุดเวลาที่ใช้คำนวน breakdown เมื่อมีงานออก

4. Calculation function

Data from JATH

Standard working time

A Working Time (Day shift)

JTEKT

Standard working time of JATH ไม่คำนวน Bekido% **Lunch time : 11:15-12:15, 11:30-12:30, 11:45-12:45

Subject	No Over time		Over time 1 Hrs.		Over time 1.5 Hrs.		Over time 2 Hrs.		Over time 2.5 Hrs.	
	Time	Duration	Time	Duration	Time	Duration	Time	Duration	Time	Duration
Start Working		07:30		07:30		07:30		07:30		07:30
Morning meeting	5 min	7:30 – 7:35	5 min	7:30 – 7:35	5 min	7:30 – 7:35	5 min	7:30 – 7:35	5 min	7:30 – 7:35
Working time	115 min	7:35 – 9:30	115 min	7:35 – 9:30	115 min	7:35 – 9:30	115 min	7:35 – 9:30	115 min	7:35 – 9:30
Morning Break	10 min	9:30 – 9:40	10 min	9:30 – 9:40	10 min	9:30 – 9:40	10 min	9:30 – 9:40	10 min	9:30 – 9:40
Working time	110 min	9:40 – 11:30	110 min	9:40 – 11:30	110 min	9:40 – 11:30	110 min	9:40 – 11:30	110 min	9:40 – 11:30
Lunch time	60 min	11:30 – 12:30	60 min	11:30 – 12:30	60 min	11:30 – 12:30	60 min	11:30 – 12:30	60 min	11:30 – 12:30
Working time	120 min	12:30 – 14:30	120 min	12:30 – 14:30	120 min	12:30 – 14:30	120 min	12:30 – 14:30	120 min	12:30 – 14:30
Afternoon Break	10 min	14:30 – 14:40	10 min	14:30 – 14:40	10 min	14:30 – 14:40	10 min	14:30 – 14:40	10 min	14:30 – 14:40
Working time	100 min	14:40 – 16:20	110 min	14:40 – 16:30	110 min	14:40 – 16:30	110 min	14:40 – 16:30	110 min	14:40 – 16:30
Over time break			20 min	16:30 – 16:50	20 min	16:30 – 16:50	20 min	16:30 – 16:50	20 min	16:30 – 16:50
Working time			50 min	16:50 – 17:40	80 min	16:50 – 18:10	110 min	16:50 – 18:40	140 min	16:50 – 19:10
5S	10 min	16:20 – 16:30	10 min	17:40 – 17:50	10 min	18:10 – 18:20	10 min	18:40 – 18:50	10 min	19:10 – 19:20
Stop production time		16:30		17:50		18:20		18:50		19:20
Total time	540 min		620 min		650 min		680 min		710 min	
Total Break time	95 min		115 min		115 min		115 min		115 min	
Total Working time	445 min		505 min		535 min		565 min		595 min	

A Working Time (Night shift)

JTEKT

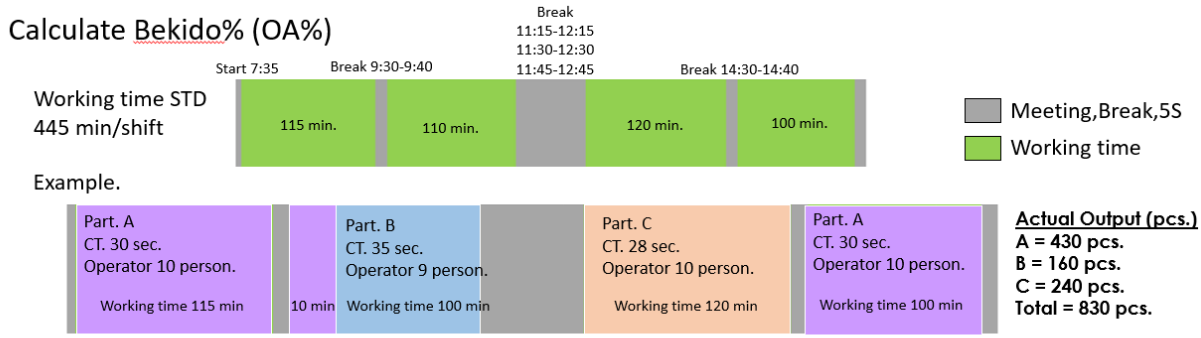
Standard working time of JATH ไม่คำนวน Bekido% **Lunch time : 23:15-00:15, 23:30-00:30, 23:45-00:45

Subject	No Over time		Over time 1 Hrs.		Over time 1.5 Hrs.		Over time 2 Hrs.		Over time 2.5 Hrs.	
	Time	Duration	Time	Duration	Time	Duration	Time	Duration	Time	Duration
Start Working		19:30		19:30		19:30		19:30		19:30
Morning meeting	5 min	19:30 – 19:35	5 min	19:30 – 19:35	5 min	19:30 – 19:35	5 min	19:30 – 19:35	5 min	19:30 – 19:35
Working time	115 min	19:35 – 21:30	115 min	19:35 – 21:30	115 min	19:35 – 21:30	115 min	19:35 – 21:30	115 min	19:35 – 21:30
Morning Break	10 min	21:30 – 21:40	10 min	21:30 – 21:40	10 min	21:30 – 21:40	10 min	21:30 – 21:40	10 min	21:30 – 21:40
Working time	110 min	21:40 – 23:30	110 min	21:40 – 23:30	110 min	21:40 – 23:30	110 min	21:40 – 23:30	110 min	21:40 – 23:30
Lunch time	60 min	23:30 – 00:30	60 min	23:30 – 00:30	60 min	23:30 – 00:30	60 min	23:30 – 00:30	60 min	23:30 – 00:30
Working time	120 min	00:30 – 02:30	120 min	00:30 – 02:30	120 min	00:30 – 02:30	120 min	00:30 – 02:30	120 min	00:30 – 02:30
Afternoon Break	10 min	02:30 – 02:40	10 min	02:30 – 02:40	10 min	02:30 – 02:40	10 min	02:30 – 02:40	10 min	02:30 – 02:40
Working time	100 min	02:40 – 04:20	110 min	02:40 – 04:30	110 min	02:40 – 04:30	110 min	02:40 – 04:30	110 min	02:40 – 04:30
Over time break			20 min	04:30 – 04:50	20 min	04:30 – 04:50	20 min	04:30 – 04:50	20 min	04:30 – 04:50
Working time			50 min	04:50 – 05:40	80 min	04:50 – 06:10	110 min	04:50 – 06:40	140 min	04:50 – 07:10
5S	10 min	04:20 – 04:30	10 min	05:40 – 05:50	10 min	06:10 – 06:20	10 min	06:40 – 06:50	10 min	07:10 – 07:20
Stop production time		04:30		05:50		06:20		06:50		07:20
Total time	540 min		620 min		650 min		680 min		710 min	
Total Break time	95 min		115 min		115 min		115 min		115 min	
Total Working time	445 min		505 min		535 min		565 min		595 min	

4. Calculation function

Data from JATH

Calculate Bekido% (OA%)



Bekido% = Actual output (pcs.)x100% / Working time (sec.) / Cycle Time (sec.) = xx.xx %

Bekido% (A) = 430 pcs. X 100% / ((115+10+100 min.)x60)/30 sec. = 430 pcs. X 100% / 450 pcs. = 95.56%

Bekido% (B) = 160 pcs. X 100% / (100 min. x60)/35 sec. = 160 pcs. X 100% / 171 pcs. = 93.56%

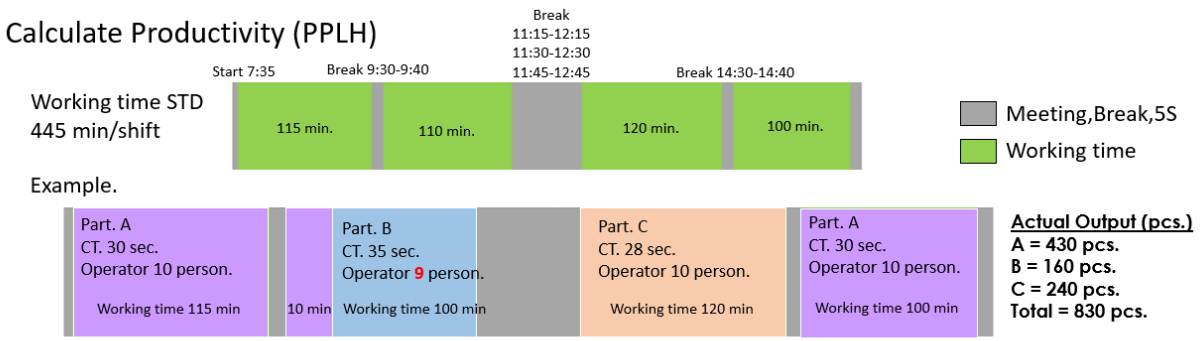
Bekido% (C) = 240 pcs. X 100% / (120 min.x60)/28 sec. = 240 pcs. X 100% / 257 pcs. = 93.38%

Bekido% (All) = (430 + 160 + 240 (pcs.)) x 100% / 450 + 171 + 257 (pcs.)

= 830 pcs. X 100% / 878 pcs.

= 94.53%

Calculate Productivity (PPLH)



PPLH = Actual Output (pcs.) / No. of operator (person) x Working time(hr.) = xx.xx (pcs./man*hr.)

PPLH (A) = 430 pcs. / 10 person. x ((115+10+100 min.)/60) = 430 pcs. / 10 person. x 3.75 hr. = 11.47 pcs./man*hr.

PPLH (B) = 160 pcs. / 9 person. x (100 min./60) = 160 pcs. / 9 person. x 1.67 hr. = 10.64 pcs./man*hr.

PPLH (C) = 240 pcs. / 10 person. x (120 min./60) = 240 pcs. / 10 person. x 2 hr. = 12 pcs./man*hr.

PPLH (All) = 830 pcs. / (10 person. x 3.75 hr.)+(9 person. x 1.67 hr.)+ (10 person. x 2 hr.)

= 830 pcs. / 72.53 man*hr.

= 11.44 pcs./man*hr.

4. Calculation function

Data from JATH

Calculate Chokko%

Calculate Chokko%

$$\text{Chokko\%} = \frac{\text{Actual output (pcs.)x100\%}}{\text{Working time (sec.) / Cycle Time (sec.)}} = \text{xx.xx \%}$$

ปัจจุบัน เราคำนวณแบบซ่อนปัญหา

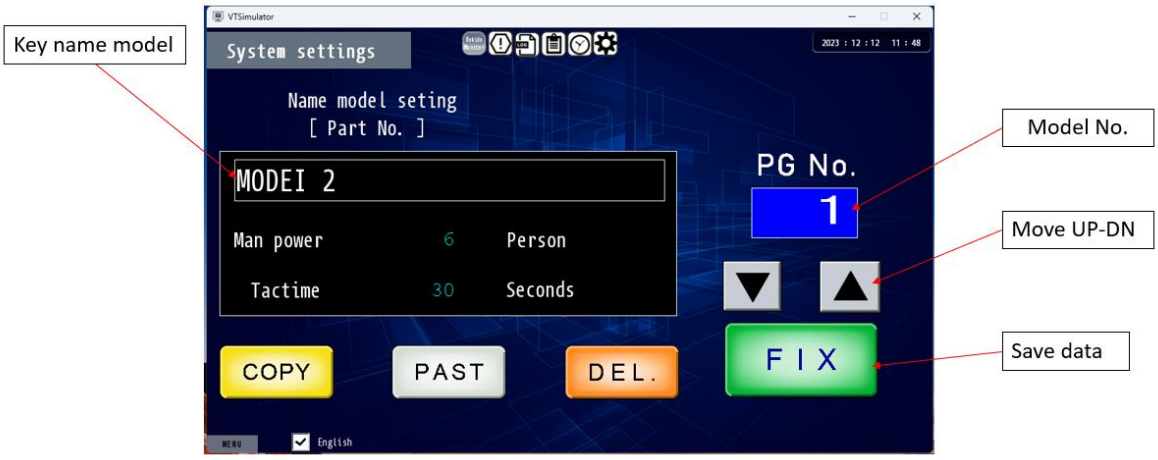
$$\text{Chokko\% (OK ratio)} = \frac{\text{(Direct finish good + rework) x 100\%}}{\text{(Direct finish good + rework + NG)}}$$

$$= \frac{(100+10) \times 100\%}{(100 + 10 + 5)} = \frac{110 \times 100\%}{115} = 95.65\ \%$$

5. Operation Guide

Parameter setting

Model setting (Part No. setting)



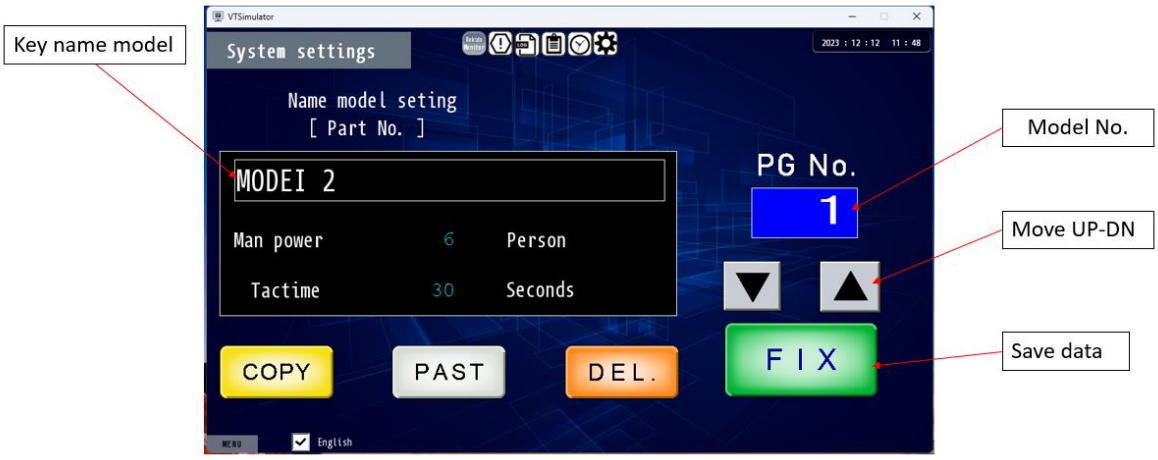
Working time setting

Time slot	Start time	End time	Time slot	Start time	End time
1	7 : 30	7 : 35	13	19 : 30	19 : 35
2	7 : 35	9 : 30	14	19 : 35	21 : 30
3	9 : 30	9 : 40	15	21 : 30	21 : 40
4	9 : 40	11 : 30	16	21 : 40	23 : 30
5	11 : 30	12 : 30	17	23 : 30	0 : 30
6	12 : 30	14 : 30	18	0 : 30	2 : 30
7	14 : 30	14 : 40	19	2 : 30	2 : 40
8	14 : 40	16 : 30	20	2 : 40	4 : 30
9	16 : 30	16 : 50	21	4 : 30	4 : 50
10	16 : 50	17 : 40	22	4 : 50	5 : 40
11	17 : 40	17 : 50	23	5 : 40	5 : 50
12	0 : 00	0 : 00	24	0 : 00	0 : 00

5. Operation Guide

Parameter setting

Model setting (Part No. setting)



Working time setting

Time slot	Start time	End time	Time slot	Start time	End time
1	7 : 30	7 : 35	13	19 : 30	19 : 35
2	7 : 35	9 : 30	14	19 : 35	21 : 30
3	9 : 30	9 : 40	15	21 : 30	21 : 40
4	9 : 40	11 : 30	16	21 : 40	23 : 30
5	11 : 30	12 : 30	17	23 : 30	0 : 30
6	12 : 30	14 : 30	18	0 : 30	2 : 30
7	14 : 30	14 : 40	19	2 : 30	2 : 40
8	14 : 40	16 : 30	20	2 : 40	4 : 30
9	16 : 30	16 : 50	21	4 : 30	4 : 50
10	16 : 50	17 : 40	22	4 : 50	5 : 40
11	17 : 40	17 : 50	23	5 : 40	5 : 50
12	0 : 00	0 : 00	24	0 : 00	0 : 00

5. Operation Guide

Monitoring operation

Monitoring Data by Slot time

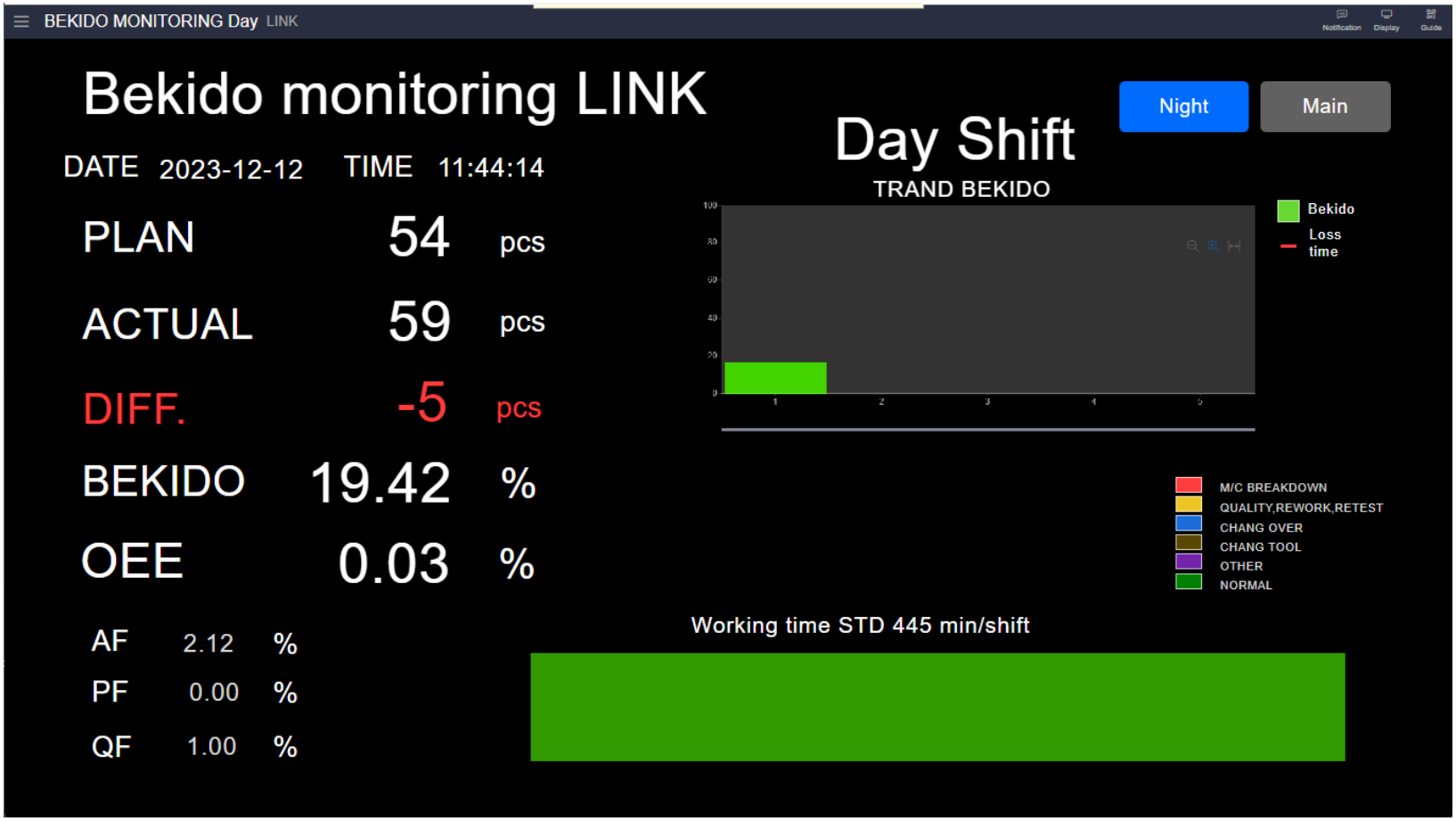
Monitoring by switching model

5. Operation Guide

Monitoring operation

Main dashboard monitor

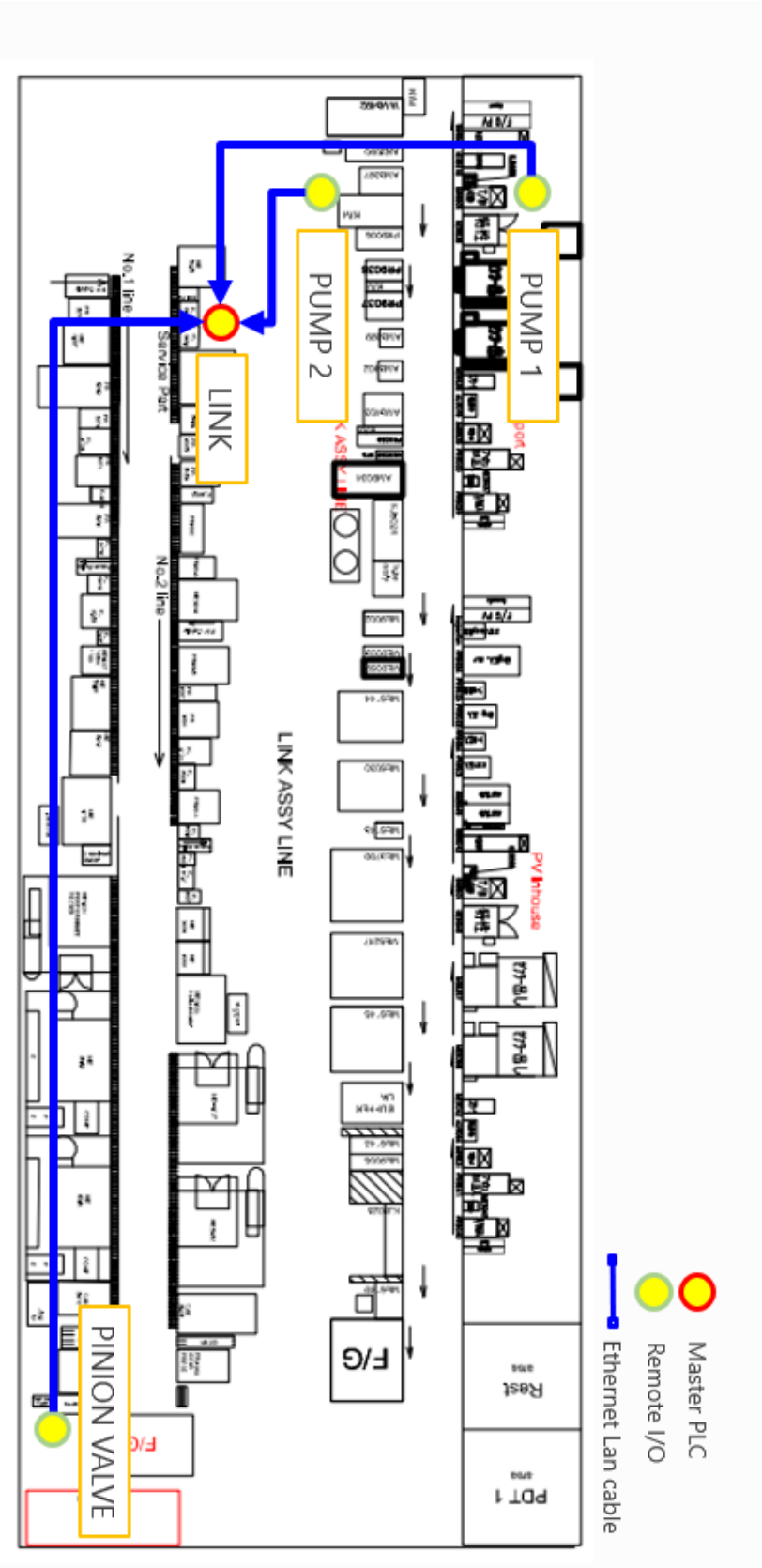
In Production line monitor



Example present

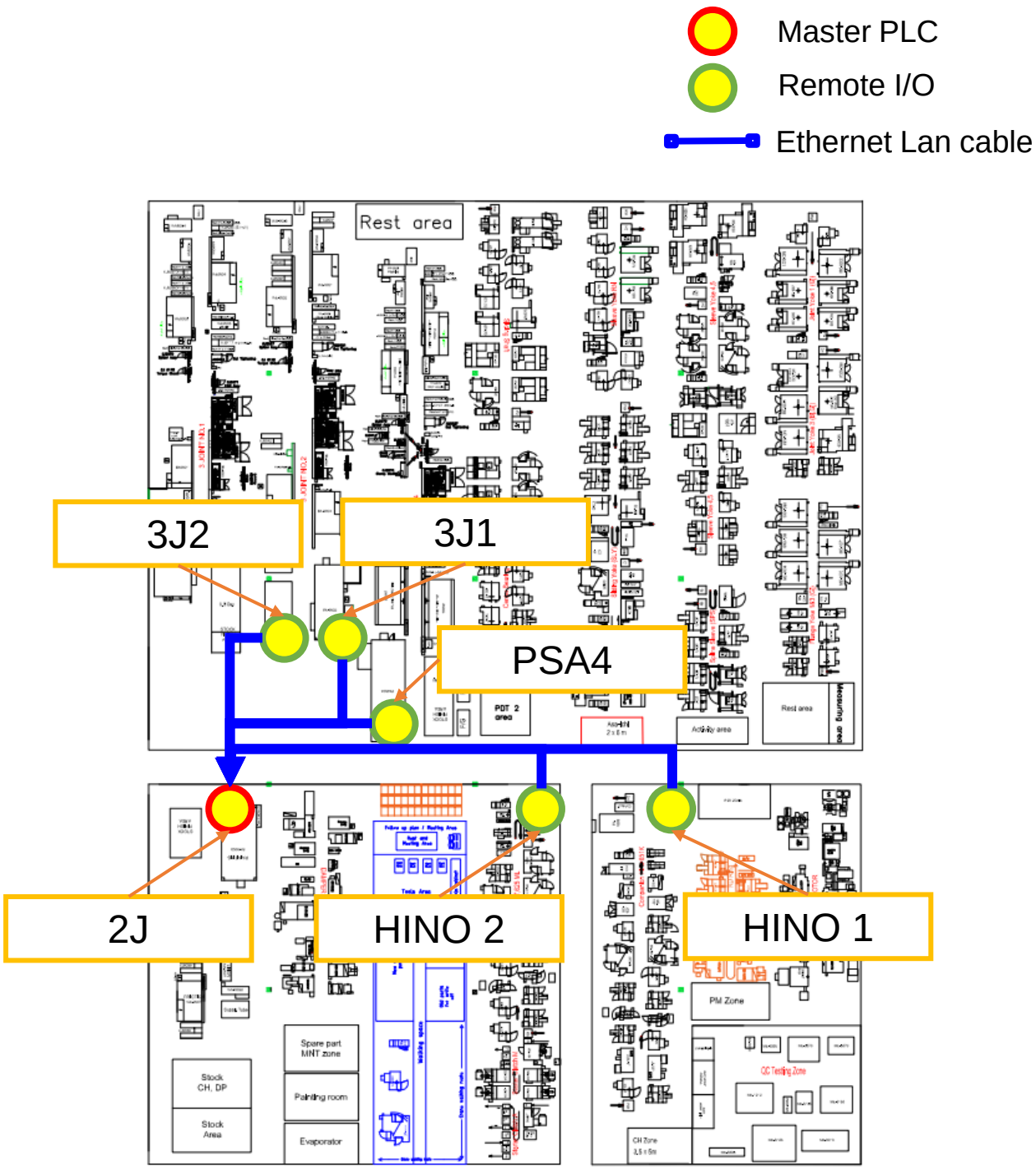
6. Installation

Wiring Lan cable point #Factory 1



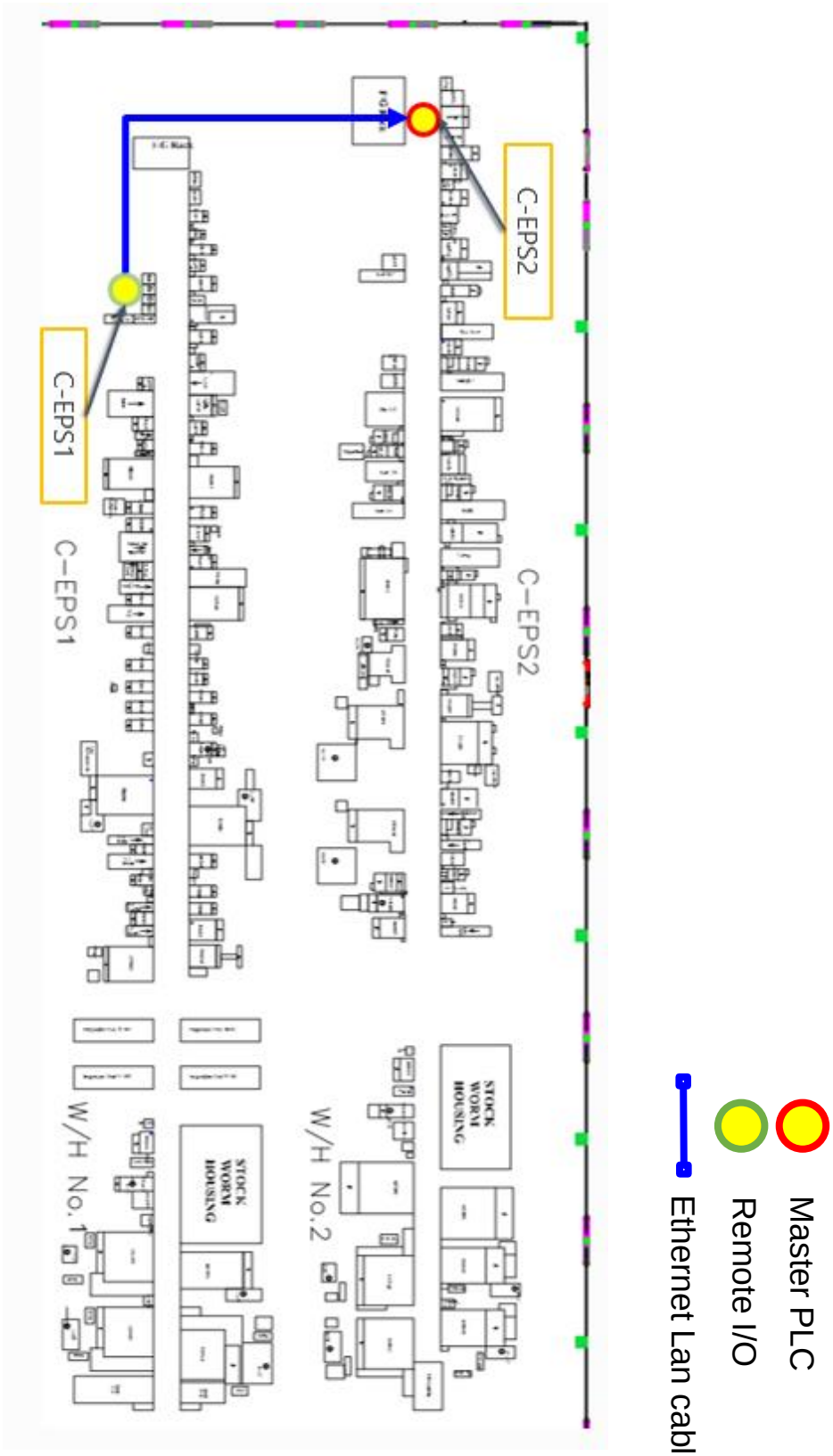
6. Installation

Wiring Lan cable point #Factory 1



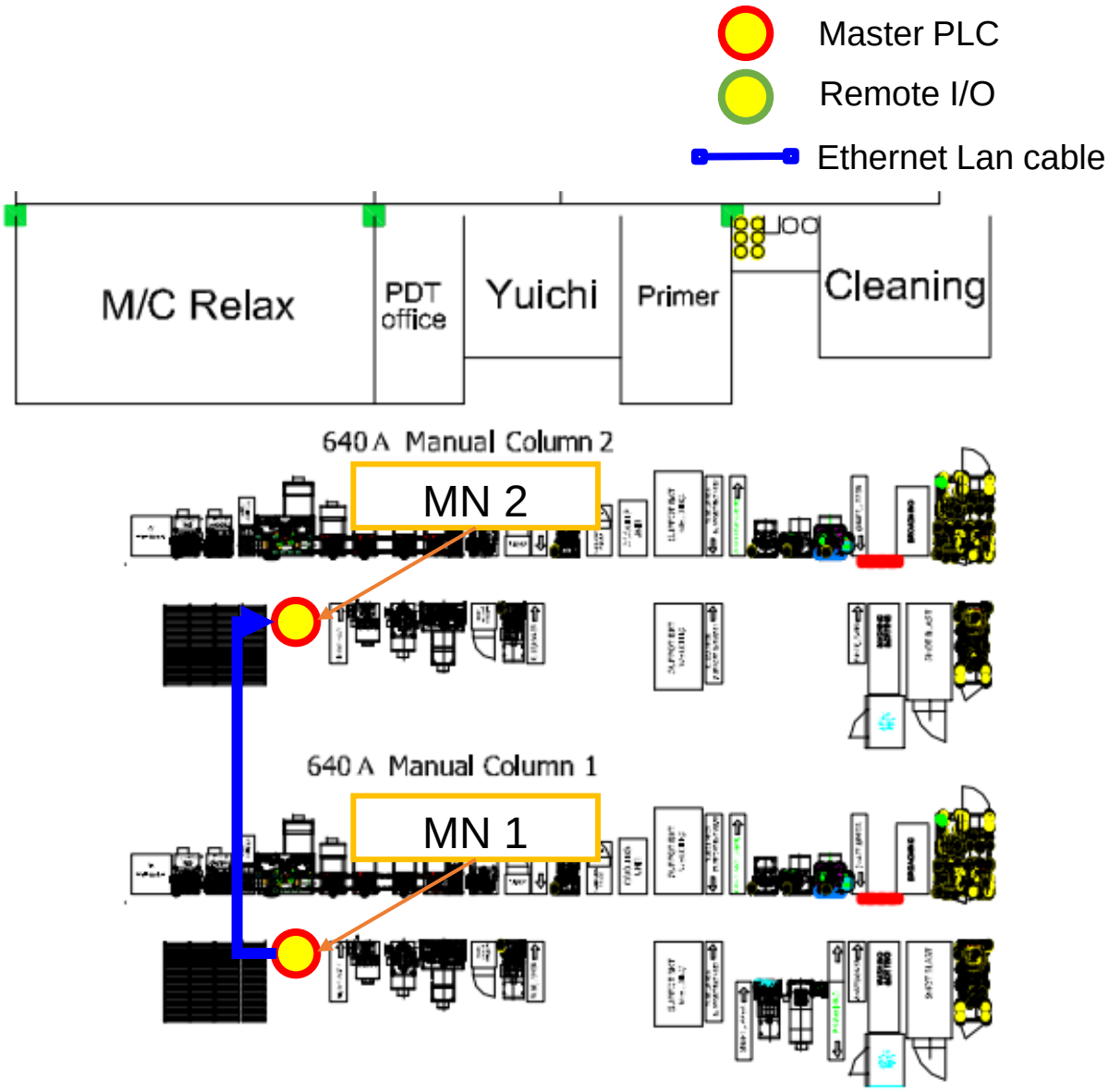
6. Installation

Wiring Lan cable point #Factory 3 Zone 1



6. Installation

Wiring Lan cable point #Factory 3 Zone 2



Schedule present

7. Q&A

Question	By	Date	Answer	By

8. Sign off

We hereby acknowledge and agree the above-mentioned blueprint requirements.
Any changes required after the sign off for this blueprint will be addressed through the change request process.

JTEKT AUTOMOTIVE (THAILAND) CO.,LTD.
Sign:

_____

Name:

_____

Title:

_____

Date:

_____

TOMAS TECH CO.,LTD.

Sign:

_____

Name:

_____

Title:

_____

Date:

_____

END OF BLUEPRINT##