GLOBAL FOUNDRIES U.S. Inc. 5095-S10754-12

CLEAN TRACK LITHIUS Pro Z
Specifications

MACHINE NO. MDZ111637 , MDZ111638

CUSTOMER		Tokyo Electron Ltd.		Tokyo Electron Kyushu Ltd.	
Approval	Originator	Approval	Originator	Approval	Originator
				K.Ito Feb.15.2022	M.Nogawa Feb.15.2022

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INTRODUCTION

<Application>
This specification is available for the CLEAN TRACK LITHIUS Pro Z which is the most recent model in the highly successful CLEAN TRACK series of Tokyo Electron Limited.

<Equipment Overview>
CLEAN TRACK LITHIUS Pro Z is used in the photolithography process. It is microprocessor controlled system automating all processes continually including adhesion promoter, pre-baking, coating, development and post-baking.

<1.Warranty for the Products>
1.1 Scope of Warranty
TOKYO ELECTRON LIMITED ("TEL") shall warrant that certain items distributed by TEL ("Products") will conform to specifications furnished or approved by TEL ("Specifications") under normal use and service in accordance with the manuals which TEL provides with respect to the Products ("TEL's manuals"). In the event that the Products do not conform to the Specifications under the above conditions during the warranty period for the Products, TEL shall provide maintenance services for such warranted Products without charge. Such maintenance shall be provided for the purpose of repair of the function and performance of the Products to the Specifications, and, at TEL's discretion, if parts are required to be replaced, TEL shall replace such parts with new parts or recycled parts equivalent to the new parts in performance.

1.2 Warranty Period
The warranty period of the Products which are systems shall be one (1) year from the date when the Products satisfy the acceptance criteria.

1.3 Exception
TEL shall have no liability under this warranty and the above remedies shall not be available to the Product user ("User") for the following damage:
(1)Damage to the Products caused by parts specified or supplied by the User.
(2)Damage to the Products caused by parts not supplied by TEL or TEL's authorized supplier.
Where the parts were supplied by TEL or TEL's authorized supplier but the warranty period for such parts has expired, TEL shall not be liable for damage to the Products caused by such parts.
(3)Damage to the Products caused by force majeure, including without limitation, governmental acts or directives; strikes; acts of God; war; insurrection, riot or civil commotion; natural disaster, fires, flooding; explosions.
(4)Damage to the Products caused by improvements made without TEL's written consent, or misuse or use of improper materials.
(5)Damage to the Products caused by maintenance provided by anyone other than TEL, TEL's authorized supplier or the User's employees who are trained by TEL for such maintenance of the Products provided they perform such maintenance in accordance with TEL's manuals.
(6)Damage to the Products caused by any deviation from the procedures indicated by TEL.
(7)Consequential damage, including, without limitation, damage resulting from defective products (e.g. defective wafers, devices, panels and other defective products produced by using the Products) or decrease of production, caused by misuse and breakdown of the Products.
(8)Damage to the Products caused by a defect which could not have been discovered given the state of scientific or technical knowledge at the time when TEL delivered the Products.
(9)Damage to the Products caused by other products, items or materials for which TEL is not liable under warranty.

1.4 Limitations
THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY/SATISFACTORY QUALITY OR FITNESS FOR A PARTICULAR PURPOSE.

1.5 Attention
(1)The environment, condition and frequency of use of the Products may have negative influence on the life of parts.
(2)The cost of the parts required to maintain the Products after the expiration of the warranty period shall be borne by the User.
(3)The cost of consumable parts and periodic replacement parts shall be borne by the Users even during the warranty period of the Products. In addition, the Users shall bear the cost of labor and transportation etc in

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connection with replacing the parts above.

<2.Liability for damages due to operation of the Products>

2.1 Liability for operation of the Products

Every operator and service person must read and thoroughly understand TEL's manuals, including, without limitation, the operation and maintenance manuals, and any additional information provided by TEL with respect to the Products and have sufficient training by TEL concerning the operation of the Products. All Danger, Warning and Cautionary notices must be carefully read, thoroughly understood and strictly observed. The User assumes its responsibility to implement all Governmental, Federal, State and local safety regulations and standards applicable to the use of the Products.

In the event that TEL identifies that a defect in the Products may cause damage to the User, TEL will send a technology change notice to the User ("Notice"), and implement the change for the identified part of the Products without charge ("Change"). The User will be required to make the arrangements necessary in order to complete implementation of the Change as soon as receiving the Notice.

2.2 Exception

TEL assumes no liability for the following damages:

(1)Damage due to improper operation or maintenance of the Products by the User.

(2)Damage caused by the alteration or addition made by anyone other than TEL not in accordance with TEL's manuals.

(3)Damage resulting from the User taking no action to implement the Change in spite of TEL's Notice.

(4)Damage caused by the User's failure to replace consumable parts and periodic replacement parts.

(5)Damage caused by operation of the Products not in accordance with the instructions specified in the Specifications and/or TEL's manuals.

(6)Damage to the Products caused by force majeure, including without limitation, governmental acts or directives; strikes; acts of God; war; insurrection, riot or civil commotion; natural disaster, fires, flooding; explosions.

(7)Consequential damage, including, without limitation, damage resulting from defective products(e.g. defective wafers, devices, panels and other defective products produced by using the Products) or decrease of production, caused by misuse or breakdown of the Products.

2.3 Attention

In the event that the Products are maintained and improved with parts not supplied by TEL or TEL's authorized supplier, or parts supplied by TEL or TEL's authorized supplier out of the warranty period of the parts, the User shall be liable for any defective work and incomplete performance of the Products.

Please do not defeat and of the safety interlocks on your system. Please be sure that all of the safety interlocks on your system are enabled prior to performing any operations and/or maintenance on the system.

2.4 Infringement

(1)TEL agrees to indemnify and hold the User harmless from and against any claims or actions that the Products infringe upon any rights of any third parties, including, without limitation, patent, copyright, trademark, mask works right or any other intellectual property rights, provided, however, that the User shall give TEL prompt written notice of all such claims or actions of infringement and shall provide TEL with necessary assistance and all defenses against such claims or actions, known or available to the User. TEL does not indemnify and shall not be liable for any claim of infringement, if it is arising out of: (i) the products produced utilizing the Products; (ii) the User's modification of the Products; (iii) the compliance of TEL with the User's designs, specifications, instructions, modifications or improvements; (iv) the User's combination of the Products with other products; or (v) processes or methods performed utilizing the Products.

(2)TEL shall have exclusive control over the defense, negotiation or settlement of any claims which shall be indemnified by TEL subject to the above Paragraph (1). TEL shall have the option of, and TEL's obligation of indemnification for the User shall be limited to, the following actions: (i) settling or defending against any claims of infringement with any third party asserting such claims; (ii) procuring for the User the right to continue use of the Products; (iii) modifying or substituting the Products such that the Products are noninfringing; or (iv) refunding payments paid by the User for the Products.

3.Limitation of liability

IN NO EVENT SHALL TEL BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF PROPERTY, LOSS OF PROFITS OR LOSS OF PRODUCTION DAMAGES, RESULTING FROM THE PRODUCTS OR CAUSED BY INSTALLATION, MAINTENANCE OR OTHER PERFORMANCE BY TEL, WHETHER A CLAIM FOR SUCH DAMAGES IS BASED UPON WARRANTY, CONTRACT, TORT, NEGLIGENCE OR OTHERWISE. TEL'S TOTAL LIABILITY FOR THE CLAIM OF LOSSES OR DAMAGES CONCERNING THE PURCHASE, USE, OR OPERATION OF THE PRODUCTS SHALL IN NO EVENT EXCEED THE PURCHASE PRICE PAID BY THE USER TO TEL FOR THE

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PRODUCTS INVOLVED IN SUCH CLAIM.

*Note: In the event of a conflict between this document and a written agreement signed by authorized representatives of User and TEL, such written agreement shall take precedence.

<Equipment Training>
The TEL-made equipment you have purchased requires routine maintenance for stable operation. These maintenance activities require sufficient basic knowledge on TEL equipment and latest maintenance information.

We offer an equipment training curriculum focusing on operation and maintenance that helps you acquire the necessary knowledge.

For enrolling in our equipment training, see the following:

1. Application
Contact the local TEL training department or sales / service office to request training. Your enrollment reservation will be registered after the schedule is arranged.

2. Training Fee
2.1 When You Have Training Credit
The training credit can be used on the condition provided in section "3.Use of Training Credit".

2.2 When You Do Not Have Training Credit
The specified training fee is charged.

2.3 Other Expenses
- For equipment training provided at customer's site: Basically, separate costs are charged such as transportation and accommodation costs.
- Cancellation fee is charged if the enrollment reservation is canceled or the schedule is changed within two weeks of the expected training start date. The cancellation fee can be paid by the training credit.

3. Use of Training Credit
3.1 What is Training Credit?
For one unit of equipment purchased, the specified number of training credits is provided. One training credit allows one trainee to enroll in the training for the equipment purchased for one day (normal hours for providing training).

3.2 Issuance and Expiration Date
Training credit is issued together with the equipment serial number when the equipment is allocated to you according to your equipment purchase order sheet. Training credit is valid for one year after the CST date of the equipment purchased.

3.3 Scope of Application
The training credit applies to the standard training course for the equipment purchased. It is available only to the customer of the factory where the equipment purchased is installed.

Note that when the equipment is relocated within the same company, any valid training credit shall be transferred to the destination. Training credit becomes invalid when the equipment is sold or transferred to a company other than the original purchasing company.

3.4 Deduction of Credit Used (Digestion)
Any of the following cases assumes one training credit is used for one person for one-day training (within normal training hours). In this case, an appropriate number of credits are deducted from the remaining balance.

- Completion of equipment training (including discontinuation and early termination by the trainee)
- Cancellation by customer of enrollment within two weeks of the expected equipment training start date and the cancellation fee is paid by training credit (excluding the case when there is an alternative trainee)
- Change by customer to the schedule within two weeks of the expected equipment training start date and the cancellation fee is paid by training credit

3.5 Others

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- A separately made agreement (e.g., in a contract), if any, is prioritized.
- Training credit has no cash value and cannot be exchanged or equivalent-exchanged with non-training items (e.g., services, parts, transportation and accommodation costs).
- For more information, contact the sales representative assigned to you.

<Equipment Installation>

1. If the user's facilities (facility hook up, chemicals, wafers, etc.) are not prepared by the user in time, TEL may change the installation schedule. Customer is responsible to provide ample wafer throughout the installation. In this case, installation engineers of TEL may repatriate from user's site for a time.
   The primary utility lines (such as Electrical, Water, Gas, Exhaust and Chemical lines) and the chemical supply & safety-related communication shall be connected by the customer.

2. Precautions for Utility preparation:

Due to the floor surface treatment for utility preparation, the strength of loading weight resistance may lower and the coating on the floor can be damaged. Please reinforce the floor strength of loading weight resistance at your own risk.

<Definition of Consumables>

Those parts that require replacement within certain periods from the start of system operation due to degradation and wear, parts that are started to be degraded and worn after the start of the manufacture and parts that are degraded and worn after the start of their use are defined as "consumables." Degradation and wear do not include damage and wear caused by design elements and damage and wear due to the manufacturing processes of the parts. The consumables of the Clean Track system are listed below:

	Consumable	Example
1	Parts requiring replacement due to time after manufacture of parts themselves.	Rubber products, etc
2	Parts requiring replacement due to operating hours(system operation hours)	Lamps, etc
3	Parts that start to be degraded and worn simultaneously with the start of their use.	Nozzle chips, wetted parts, etc
4	Disposable parts and non-warranty parts	Disposal cups, grease, etc

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1.Basic Information

1-1.Basic Specifications

・ Wafer	
Size	Comply with SEMI M1.15 300mm
Material	Silicon
Warp	Comply with SEMI M1.15 (+/-100um)
・ Utility	
Utility Outlet	Downward

1-2.Wafer Flow/Process Time/Process Temperature/Throughput

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WAFERFLOW

■**Targeted TP=xxxwph**

	CSB		MPB			BCT				3	deck		3	PRA			MPB			CSB
Temperature								205												
Wafer Flow	FOUP		TRS			SCPL	BCT	CGCH	SCPL	WISC						TRS	TRS	WEX	TRS	FOUP
Qt,y of Station / deck	4		8			2	2	4	2	1						2	1	1	2	4
Total Qt,y of Station			8			6	6	12	6	3						6	1	1	2	
Total Qt,y of Station for WIP		0	1	0	0	6	6	12	6	3	0	0	0	0	0	1	1	1	1	
Process Time						45	51	90	39											
Cooling Time								15												
Overhead Time						8	7	12.5	2.5	10.5										
Total Time			0.0			8.8	9.7	9.8	6.9	3.5						0.0	0.0	0.0	0.0	
Module TP (wph)						407	372	367	520	1028										
PRA Total Transfer Time						Max	5	Trans *	3.70	sec. /	3	PRA =	6.2		TP	580				
Throughput 349 wph																				

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*Confirm all SPIN's common arms throughput and resist pumps throughput.

Transfer ARM Total Time								
	CRA	Max	2	Trans *	5.13	sec. =	10.3	TP 349
	MPRA(Back)	Max	2	Trans *	3.78	sec. =	7.6	TP 473
	MPRA(Front)	Max	2	Trans *	3.71	sec. =	7.5	TP 480

A-Chamber Exhaust Flow rate																				
Group Name						BCT COOL	BCT	BCT PAB	CSB COOL	WISC										
Module Name	FOUP		TRS			SCPL	BCT	CGCH	SCPL	WISC						TRS	TRS	WEX	TRS	FOUP
Process Total Time			0.0			45.0	51.0	105.0	39.0	0.0						0.0	0.0	0.0	0.0	
Block Number	1		10			12	12	12	12	12						12	10	10	10	1
						13	13	13	13	13						13				
						15	15	15	15	15						15				
Module Number	1-1		10-54			12-33	12-1	12-12	12-31	11-11						12-35	10-33	10-35	10-31	1-1
	1-2		10-55			12-34	12-2	12-13	12-32	13-11						12-36			10-32	1-2
	1-3		10-56			14-33	13-1	12-22	14-31	15-11						14-35				1-3
	1-4		10-57			14-34	13-2	12-23	14-32							14-36				1-4
			10-58			15-33	15-1	14-12	15-31							15-35				
			10-59			15-34	15-2	14-13	15-32							15-36				
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(Form Ver. 201117)

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1-3.Configuration

<table>
<tr><td>16-21</td><td>16-22 CGCH</td><td>16-23 CGCH</td><td>16-36</td><td></td><td rowspan="39">1-0
CRA</td><td rowspan="39">1-1
FOU4</td></tr>
<tr><td>16-11</td><td>16-12 CGCH</td><td>16-13 CGCH</td><td>16-35 THS</td><td>10-38 THS</td></tr>
<tr><td>15-21</td><td>15-22</td><td>15-23</td><td>16-34</td><td>10-37</td></tr>
<tr><td>15-11 WISC</td><td>15-12 CWH</td><td>15-13</td><td>16-33</td><td>10-36</td></tr>
<tr><td colspan="3" rowspan="5">15-0 PRA</td><td>16-32</td><td>10-35 WEX</td></tr>
<tr><td>16-31</td><td>10-34</td></tr>
<tr><td>15-36 TRS-B</td><td rowspan="2">10-30 MPRA</td></tr>
<tr><td>15-35 TRS-B</td></tr>
<tr><td>15-34 SCPL-B</td><td rowspan="5"></td></tr>
<tr><td colspan="2">16-1</td><td>16-2</td><td>15-33 SCPL-B</td></tr>
<tr><td colspan="2">15-1 BCT</td><td>15-2 BCT</td><td>15-32 SCPL</td></tr>
<tr><td>14-21</td><td>14-22 CGCH</td><td>14-23 CGCH</td><td>15-31 SCPL</td></tr>
<tr><td>14-11</td><td>14-12 CGCH</td><td>14-13 CGCH</td><td>14-36 TRS-B</td></tr>
<tr><td>13-21</td><td>13-22</td><td>13-23</td><td>14-35 TRS-B</td><td></td></tr>
<tr><td>13-11 WISC</td><td>13-12 CWH</td><td>13-13</td><td>14-34 SCPL-B</td><td>10-33 TRS</td></tr>
<tr><td colspan="3" rowspan="5">13-0 PRA</td><td>14-33 SCPL-B</td><td></td></tr>
<tr><td>14-32 SCPL</td><td>10-32 TRS</td></tr>
<tr><td>14-31 SCPL</td><td>10-31 TRS</td></tr>
<tr><td></td><td rowspan="3"></td></tr>
<tr><td>13-35 THS</td></tr>
<tr><td>13-34</td><td rowspan="4"></td></tr>
<tr><td colspan="2">14-1</td><td>14-2</td><td>10-22 THS</td></tr>
<tr><td colspan="2">13-1 BCT</td><td>13-2 BCT</td><td>10-21 WEX</td></tr>
<tr><td>12-21</td><td>12-22 CGCH</td><td>12-23 CGCH</td><td>10-62 THS</td></tr>
<tr><td>12-11</td><td>12-12 CGCH</td><td>12-13 CGCH</td><td>12-36 TRS-B</td><td>10-54 TRS*8</td></tr>
<tr><td>11-21</td><td>11-22</td><td>11-23</td><td>12-35 TRS-B</td><td></td></tr>
<tr><td>11-11 WISC</td><td>11-12 CWH</td><td>11-13</td><td>12-34 SCPL-B</td><td rowspan="2">10-10 MPRA</td></tr>
<tr><td colspan="3" rowspan="7">11-0 PRA</td><td>12-33 SCPL-B</td></tr>
<tr><td>12-32 SCPL</td><td>10-8</td></tr>
<tr><td>12-31 SCPL</td><td>10-7</td></tr>
<tr><td>11-36</td><td>10-6</td></tr>
<tr><td>11-35 THS</td><td>10-5</td></tr>
<tr><td>11-34</td><td>10-4</td></tr>
<tr><td>11-33</td><td>10-3</td></tr>
<tr><td colspan="2">12-1 BCT</td><td>12-2 BCT</td><td>11-32</td><td>10-2</td></tr>
<tr><td colspan="2">11-1</td><td>11-2</td><td>11-31</td><td></td></tr>
</table>

1-10 w/o FOUP Exchanger

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*Required set up condition

Main Body	Temperature	Room temperature should be within 20 to 25 deg-C. Set up main body within +/- 2.0 deg-C from room temperature. (Fluctuation rate: ±1deg-C per 10min)
	Humidity	Room Humidity should be within 40-50%RH. Set up main body within +/- 5.0 %RH from room Humidity. (Fluctuation rate: ±1% per 10min)
Chemical Cabinet	Temperature	Room temperature should be within 19 to 27 deg-C. Set up main body within +/- 4.0 deg-C from room temperature. The limitation of Chemical temperature control set value ±2deg-C should take priority over the temperature control performance.
	Humidity	Non condensing
THC	Temperature	Room temperature should be within 20 to 27 deg-C. Refer to OEM manual for the Room temperature range (Fluctuation rate: ±1deg-C per 10min)
	Humidity	Room Humidity should be within 40-50%RH. Refer to OEM manual for the Room temperature range (Fluctuation rate: ±1% per 10min)
AC Power Box	Temperature	Room temperature should be within 19 to 27 deg-C. Set up main body within +/- 4.0 deg-C from room temperature.
	Humidity	Non condensing

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1-4.Location

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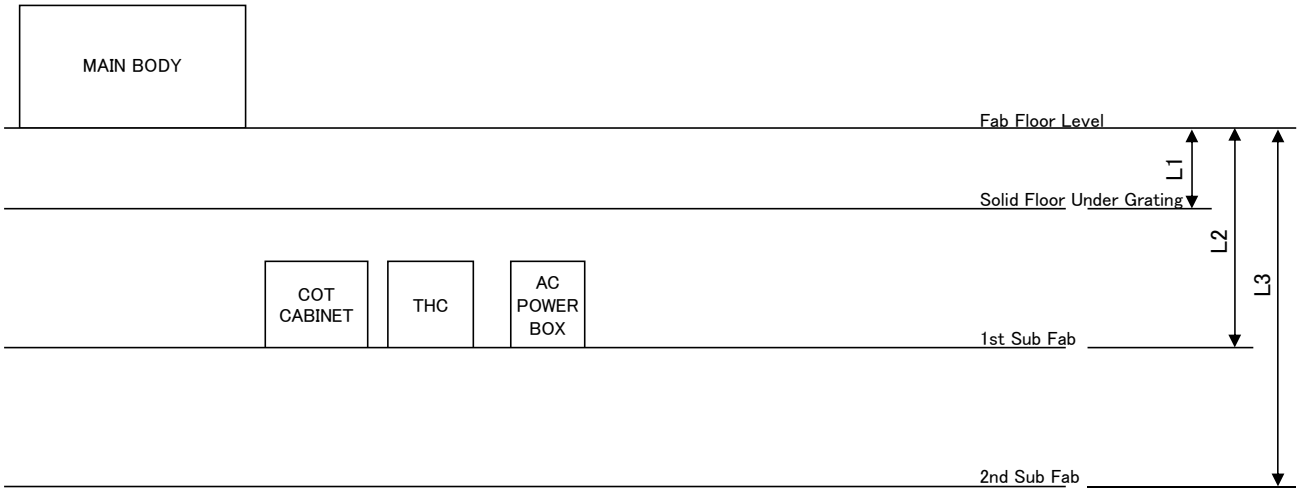
LOCATION　　＊ The below figure is a reference. Please refer to "Setting positions" for the actual location.



Floor structure

	Fab Floor level	Solid Floor Under Grating	1st Sub Fab	2nd Sub Fab
Floor Height : L1-L3 (m)	0		9.9	

Setting positions

Standard structure	Fab Floor level	Solid Floor Under Grating	1st Sub Fab	2nd Sub Fab
MAIN BODY	○	-	-	-
COT CABINET		-	○	
DEV CABINET		-		
THC		-	○	
AC Power BOX		-	○	
Other		-		
Other(2)		-		
Other1	**Fab Floor level**	**Solid Floor Under Grating**	**1st Sub Fab**	**2nd Sub Fab**
COT CABINET(1)		-		
DEV CABINET(1)		-		
TRANS. BOX		-		
FIRE EXTINGUISHER(1)		-		
FIRE EXTINGUISHER(2)		-		
UPS		-		
		-		
		-		
Other2	**Fab Floor level**	**Solid Floor Under Grating**	**1st Sub Fab**	**2nd Sub Fab**
CONNECTION BOX	-		-	-
MANIFOLD	-		-	-
VALVE BOX	-		-	-
	-		-	-
	-		-	-
	-		-	-

Specified length of line (unit: 1m)

	Fab Floor level	Solid Floor Under Grating	1st Sub Fab	2nd Sub Fab
Floor level		-	-	-
Solid Floor Under Grating			-	-
1st Sub Fab	25		20	-
2nd Sub Fab				

Specified of special length except the above-mentioned (unit: 1m)

*** - ***	Special length (m)
Main Body - THC (Duct only)	15
Main Body - THC (except Duct)	20

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2.Module Specification

2-1.Carrier Station Block : CSB

2-1-1. CSB(1)

・ Loadport Stage Height	900 mm (Comply with SEMI E15.1)
・ Wafer Transport Method	Single fork robotics transport method (X, Y, Z, Theta)
・ Sensor	
Placement Sensor	Monitoring carrier to be set correctly.
Presence Sensor	Monitoring presence/absence of carrier on load port.
Mapping Sensor	Checking wafers position in carrier.
Wafer Out Sensor	Detecting wafers out from the carrier.
Wafer Sensor	Detecting presence/absence of wafer on fork and also wafers position on fork.
・ Load Port Specifications	BOLTS/Light (Comply with SEMI E92)
・ Loader	FOUP-capable
・ Loadport Lockout Pin (SEMI E1.9)	FEOL
・ Loadport Indicator	Comply to customer requirement.
・ Operator Access Switch	Operator access switch installed for each load port.
・ FOUP Type	25 Wafers
・ Borrowing Cassette from Customer	None (Adjusted with TEL's FOUP.)
・ Kinematic Coupling Pin (SEMI E57)	TEL standard specification.
・ Independent Clamp	Carrier Fixing at Undock Position
・ Media Drive	DVD-RW Drive
・ Keyboard / Trackball	Embedded underneath the main operation panel.
・ Fan Filter Unit (FFU)	Fan filter unit is installed.
・ CRA/HCRA/TCRA	
FORK	ESD Control FORK
・ AMHS	OHT
・ OHT	
SEMI E84 Photo I/O Sensor	TEL provides connection ports for Photo I/O Sensor on the top of CSB. Customer provides Photo I/O Sensor.
Standby Mode	Stand-by for Receiving
Curtain Sensor	None
・ Carrier ID Reader	Capable of Carrier ID Reader
・ Preparation of ID Reader	OMRON (Tiris-Tag , RF) ;Every required parts provided by TEL.
・ Ionizer	SIMCO-ION, Ionizer to be installed.
・ Side Panel in Loader part(Front side/Back side)	Present

2-2.Process Station Block : PRB

2-2-1. PRB(4)

・ Process block transportation arm:PRA	
Wafer Transport Method	Two fork robotics transport method (X1, X2, y, Z, Theta)
Wafer Sensor	Detecting presence/absence of wafer on fork and also wafers position on fork.
・ Multipurpose transportation arm:MPRA	
Wafer Transport Method	STD CSB : Two forks robotics transport method (X1,X2,Z,Theta) HCSB : N/A
Wafer sensor	STD CSB : Detecting presence/absence of wafer on fork and also wafers position on fork. HCSB : N/A
・ MPB	
Fork(X1,2)	ESD Control FORK
・ Detecting Stranded Wafer-SCPL	Present
・ Chemical Filter	Option (Ion exchange type : 4-year-lifespan)

2-3.Bottom Anti Reflection Coat Process Station : BCT

2-3-1. BCT(12-1)(12-2)(13-1)(13-2)(15-1)(15-2)

・ Rotation Speed	
Setting Range	0, 10 - 4,000 rpm (Set in a minimum unit of 1 rpm)
Accuracy	± 1 rpm of a specified speed within the setting range

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・ Acceleration	
Setting Range	100 - 30,000 rpm/sec (Set in a minimum unit of 100 rpm/sec)
Accuracy	± 7 % of a specified acceleration within the Setting Range
・ Dual Band Monitoring for Rotation Rate	
Rotation Rate to be Warned	± 10 % or more, or less than ± 20 % of a set speed ... warned
Rotation Rate to be Suspended	± 20 % or more of a set speed ... alarm + station suspended
・ Dummy Dispense	Specified by Dummy Dispense Recipe. (Possible to operate manually on sub-operation panel) Dispense condition can be specified according to the OR, that is Time Interval, Number of Processing Wafers or Number of Process Jobs.
・ Chuck	
Chuck Vacuum Sensor	Pressure sensor with digital display (Alarm band can be set.)
・ Exhaust Monitor	Digital manometer (Higher/Lower limit can be set.) 0 - 200Pa
・ Control of Temp. & Humid. Inside Cup	Supplying the air, whose temp and humid are controlled by THC, to the inside cup.
・ ULPA Filter	Installed onto the outlet where temp & humid-controlled-air comes out.
・ General	
Shutter (PRA Side)	Installed onto the inlet where wafers enter to go into the COT
COT Cup	PZ CUP
Cup detaching mechanism	Present
・ GENERAL	
Cup Base	Standard cup base
Chuck Type	Concentric circles
・ Resist	
Number of Nozzles	8 Nozzles
RESIST NOZZLE No.	1-8
Pump Type	AMCP-FP-VH8G-G
Filter Type	THM8162-C + PHD12ANXEH11B-XP
RESIST Dispense Control	AMC-VS-XH3G-G
Nozzle tip type	PFA Nozzle Tip
Nozzle Bath Type	Nozzle cleaning Type
Resist Flowmeter	Comply to customer requirement.
Resist Filter Auto Air Vent	Enables automatic air venting at resist filter.
Resist Temperature Control	Present
・ Solvent	
E.B.R. Nozzle Type	Stainless steel reduced-diameter nozzle
Back Rinse	2 Stainless steel reduced-diameter nozzles
RRC Nozzle	PFA Nozzle Tip
Bevel Rinse	Present
Filter Type	A2MZ2220T+A2SKCLMK1
IFF-S/IFF-S2 Filter Type	EX0Z2220T + EX5TT00K1
・ Exhaust	
Auto Damper in COT	Switching between ON and OFF for exhausting air around cup.
Exhaust Duct Cleaning Function	Present
・ Nozzle Camera installation	Present : Nozzle Monitor & Adjustment(NMA) with Storage function
・ Spin Module Monitor	Present : Spin Module Monitor (SMM) with Storage function
・ ESD Control (3Pin)	PF+PEEK

2-4.COT Chemical Supply System

2-4-1.RESIST Supply System

BCT	1-8
・ Type-1	
Bottle	1G Standard Type : Glass Bottle
・ Type-1	
Resist Bottle Auto Switching	Present
Bottle L/E Detection Method	Bottle Out Tube Sensor
・ Alarm Recovery Option	After bottles are exchanged, the liquid supply to the tank is done by the automatic operation.

2-4-2.SOLVENT Supply System(1)(2)(3)

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・ Facility I/F	
Factory Supply	Present
Factory Solvent Supply Communication Specifications	Comply to customer requirement.
・ Supply	
Supply Module Type	Pump Chemical Supply System
・ Changing of Solvent Line O-ring (Kalrez)	Change all O-rings used at Solvent Line, which contact with chemical liquid, to the Kalrez ones.
・ IFF-S	Present
・ CRF	Present
・ Primary Bypass Line	Present
・ Primary Filter Type	Primary:AMVZL32KT + APLZ0LKM1,Secondary:AMVZL32KT + AWATMLKM1

2-5.Spin Tower Drain System

2-5-1.COT Series Drain System(1)

・ Module	COT-ALL
・ Drain Method	Facility direct drain (w/o pump)
・ Factory Drain Communication Specifications	None

2-6.Dispense Diagram

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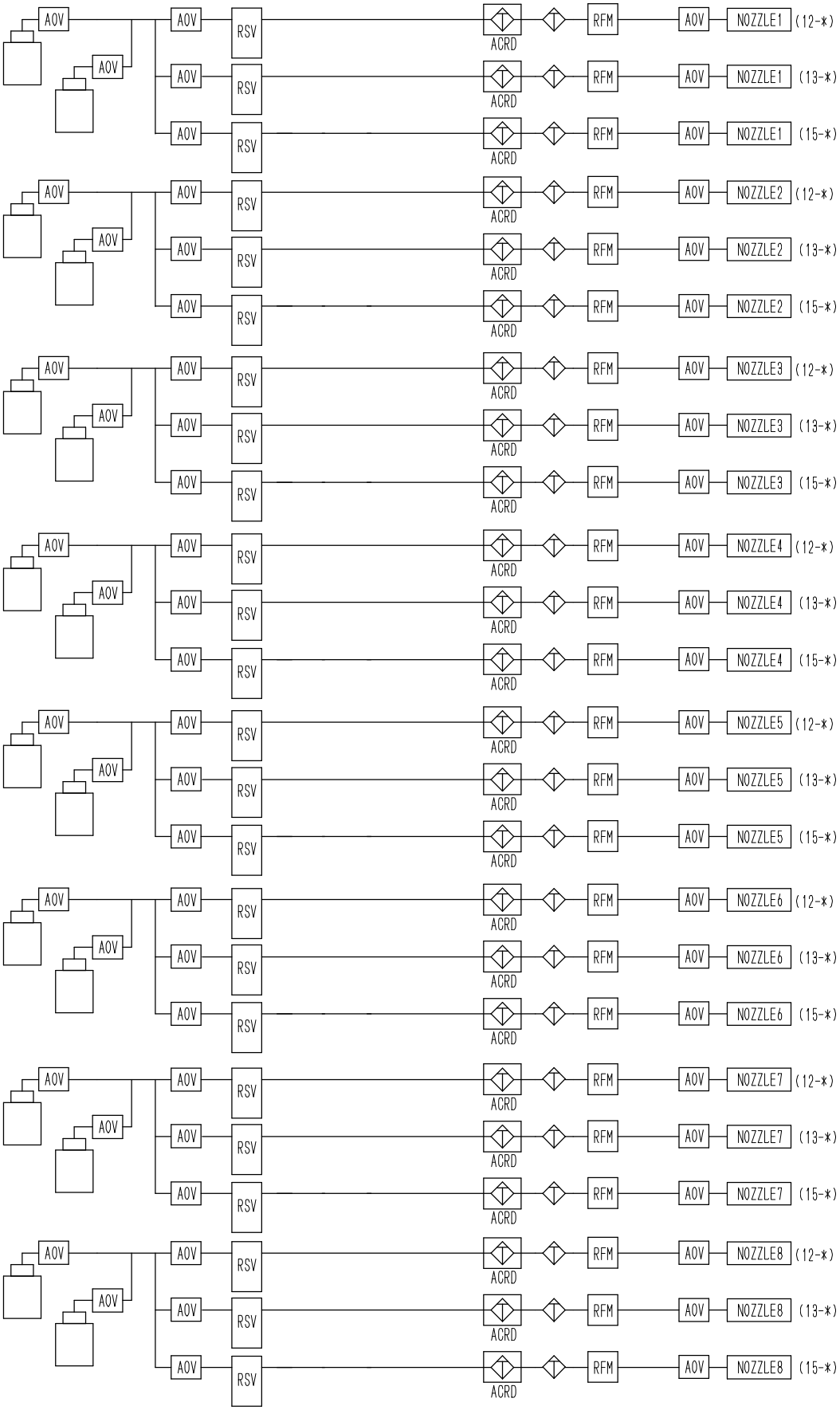
BCT DISPENSE DIAGRAM (1/2)



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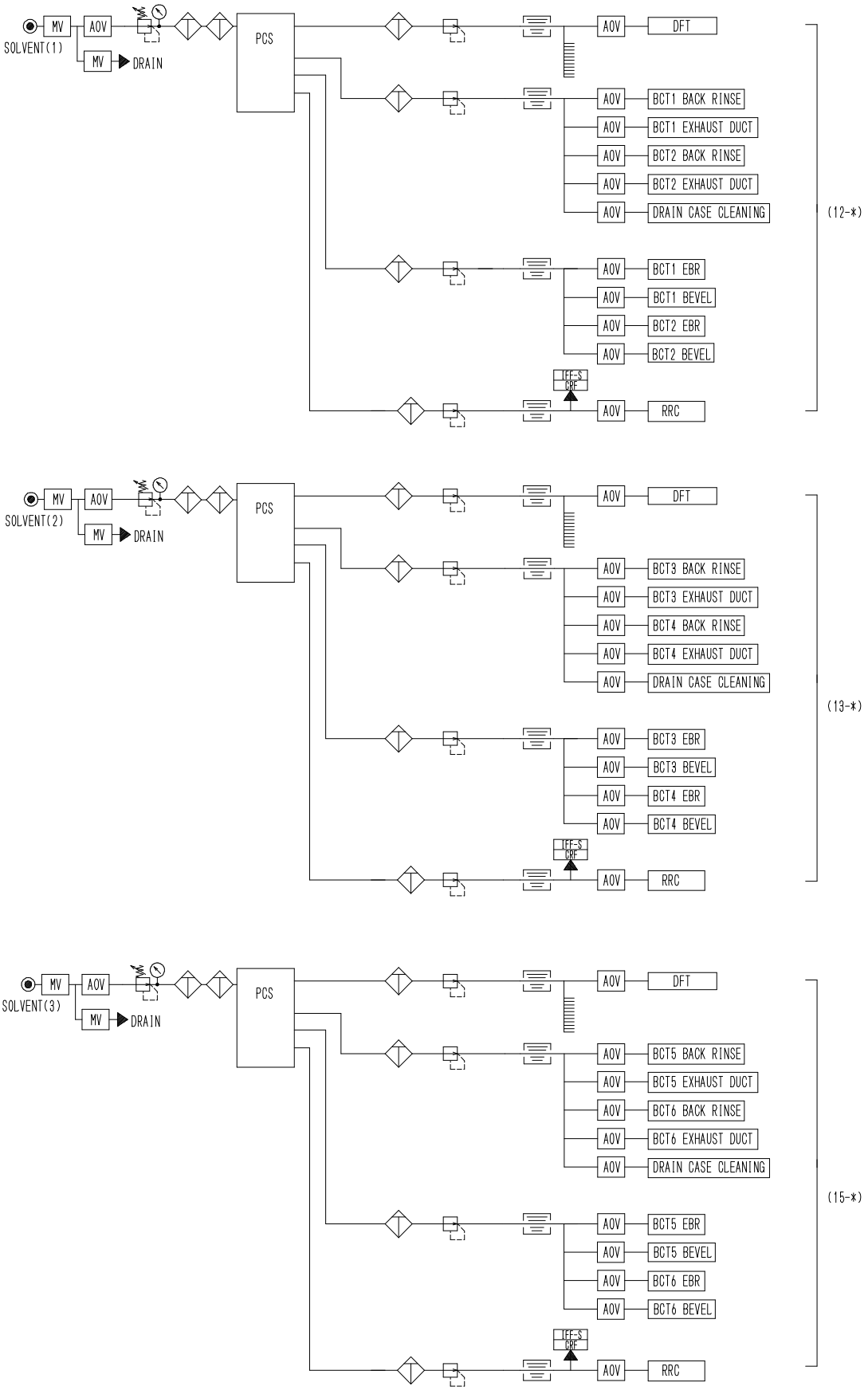
BCT DISPENSE DIAGRAM (2/2)



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2-7.Chilling General-Purpose Hot Plate Process Station with Cover Heater : CGCH

2-7-1. CGCH(12-12)(12-13)(12-22)(12-23)(14-12)(14-13)(14-22)(14-23)(16-12)(16-13)(16-22)(16-23)

・ Process Type and Guaranteed Temperature Range	BARC (Guaranteed temperature range : 180.0 - 250.0 ℃), (Set in a minimum unit of 0.1℃)
・ Hot Plate Rapid Temperature Change	Time required for temperature change of Delta T=50C among from 180 to 250 degrees: Within 150 seconds
・ Dual Band Temperature Monitoring	
Temp. Range to be Warned	Possible to set in Recipe --- Warned
Temp. Range to be Suspended	Possible to set in Recipe --- Alarm + Station Suspended
Temp. Range possible to be Set	± 0.1 to ± 25.0 °C (Set in a minimum unit of 0.1 °C) Note) Depending on the temperature accuracy of the plate, range of actual minimum set value may be limited.
・ Hot Plate Heating Method	Using 7ch concentric circles patterned P.I.D. control
・ Hot Plate Process Method	Proximity (0.1 mm) Using gap pin
・ Hot Plate Wafer Guide	A circular cylinder-shaped guide prevents displacement of wafers When they are placed onto a hot plate
・ Prevention of Excessive Temperature Rise	Detect overheating by independent thermo-switch (Hardware Interlock)
・ Chill Arm Temperature Control Method	Customer's process cooling water to be used.
・ Chill Arm Process Method	Proximity (0.33mm) Using gap pin

2-8.Slim Chill Plate Process Station : SCPL

2-8-1. SCPL(12-31)(12-32)(14-31)(14-32)(15-31)(15-32)

・ Guaranteed Temperature Range	22.0 - 24.0C
・ Chill Plate Cooling Method	Chilled water controlled by thermal module
・ Chill Plate Processing Method	Proximity gap pin

2-9.Slim Chill Plate Process Station : SCPL-B

2-9-1. SCPL-B(12-33)(12-34)(14-33)(14-34)(15-33)(15-34)

・ Guaranteed Temperature Range	22.0 - 24.0C
・ Chill Plate Cooling Method	Chilled water controlled by thermal module
・ Chill Plate Processing Method	Proximity gap pin

2-10.Wafer Inttelligent Scanner Inspection Module after Coating : WISC

2-10-1. WISC(11-11)(13-11)(15-11)

・ Detectable defect type	coated, defective coating, bake error, etc.
・ Detection performance	
Detectable defect size	1000 um or larger (on WSW)
・ Stage drive	Double axis drive (X;Theta)
・ Chuck	
Shape	concentric circle
Chuck VAC sensor	Pressure sensor with digital indicator (Alarm band settable)
・ Notch joint structure	
LED	Red LED
Motion	Theta axis rotation
・ Imaging light source	
LED	White LED bar illumination
・ WIS Camera	3-line CCD sensor
・ WSW	WIS Standard Wafer - wafer which intentionally has defects (oxide pattern) for performance inspection.
・ Sensitivity Enhancement	Present

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3.External Equipment

3-1.CHEMICAL CABINET

3-1-1.COT CABINET

・ Sub Operation Panel	Installed on the front side of this cabinet
・ Exhaust Outlet	Upward
・ Chemical Area Manual Damper (Chemical Exhaust)	Present
・ Utility Outlet	Upward

3-2.THC

3-2-1.THC

・ Line Outlet	Upward
・ T&H Air Duct Outlet	Vertical outlet
・ Drain Pumping	When the factory-side drain line is located higher than THC, THC drain is pumped up there, using a pump
・ Type of Terminal for Main Breaker	solder-less terminal (US)
・ Chiller Type	Comply to customer requirement.
・ Cable outlet	Upward
・ Shipment method for parts installed on THC Cabinet	Installed and Shipped
・ Chemical Filter	Comply to customer requirement.
・ THC Preparation	Prepared by Customer (Out of warranty by TEL)

3-3.AC POWER BOX

3-3-1.AC POWER BOX

・ AC Power Box Safty Regulation	Comply to customer requirement.
・ Customer Power Supply Voltage	208V
・ Type of Terminal for Main Breaker	solder-less terminal (US)
・ Cable Outlet (Primary-side)	Top Side
・ Cable Outlet (Secondary-side)	Top Side

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4.Safety

4-1.Safety

4-1-1.Safety Signal

・ Emergency Stop Signal Input	Present (Power OFF)
・ I/F Form	Terminal Block (WAGO)
・ I/F (Terminal Block) Location	COT CABINET

4-2.Alarm Lamp

・ ALarm Lamp/Location	Present (1 piece: Location - Upper part of Carrier Station)
・ Lamp Type	
1st one (From the top)	Red
2nd one (From the top)	Yellow
3rd one (From the top)	Green
4th one (From the top)	Blue
・ Lighting Specifications	Comply to customer requirement.

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5.Software

5-1.Software

・ Online	Present
Online Communication Method	HSMS
・ Ingenio GL Applicable	Present
・ System Interlock / Interlock Level BCT RESIST	Stop next wafer in next cassette

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No.	SoftWare
1	HCI Controlled Lamp, Buzzer
2	Processed wafer count per module report function
3	Reporting Hot Plate Temperature(Max/Min/Ave) Per Wafer
4	Trace data collection by MC
5	Cancel Carrier when Cross Slot or Double Slot Error is detected
6	Reporting Carrier Approaching Completion Event
7	Uploading equipment parameters to HOST.
8	Substrate Location State Event Group CEID unification
9	STS At Work Loop Event
10	PRJob Waiting for Material event report to HOST.
11	Interface-A Function
12	Process Recipe Name report on Station Process State Event
13	Alarm Related System Log Report
14	Pump Recipe Up, Download
15	Unload Request Report Timing Change
16	AMHS TP Time Out Auto Recovery
17	Reject Wafer Abort Send
18	Interface-A symbolized ExceptionID
19	Extension of Software revision
20	Collection of Simple Type Trace Data by Interface-A
21	NTP Service
22	Dummy/Wash recipe information disclosure to HOST
23	Oven Plate Temp. Integrated Value Report
24	Supporting Bare-Si Thickness Parameter Optimization
25	Trouble Wafer Collection
26	Auto Standby
27	Parallel Flow Control
28	Excluding Specified Module from Wafer Flow function
29	Wafer delivery carrier assign function
30	Prime Cascade function
31	Report the Lot End of Inspection Module
32	Automatic log out function
33	Maintenance mode sustain function
34	Detecting Hot Plate Baking Error
35	Estimated Dispense Pressure Display on Pump Recipe Edit Screen
36	Resist Interval Return
37	Ideal Filtrating Function for Resist
38	Air Bubble Prevention
39	Status Change Event for Signal Tower
40	Validity Verification of IM at PJ Creation/Start
41	Warning Wafer Status Change
42	Chemical Usage Monitoring Function
43	Special Patch Number Display
44	Wafer Transfer Route Report Function
45	Individual Report of PJ State Event
46	Cotrol job terminated event report
47	Recipe Security

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6.Option

6-1.Option

・ PRB Internal Lighting	
PRB	Present
・ MPB/EPB Internal Lighting	
MPB/EPB	Present
・ Service Outlet	Present
COT Cabinet	Present (AC100V, 2 sockets)
・ Adjuster Foot Bottom Board-External Rack	Present
・ Mylar Sheet	Present : Main Body + External Equipment
・ Wafer transfer arm camera	
CRA	Present : Robotic Arm Camera (RAC) with Storage function
MPRA	Present : Robotic Arm Camera (RAC) with Storage function
PRA	Present : Robotic Arm Camera (RAC) with Storage function
・ ESD Control (3Pin)	
TRS	PF+PEEK
WEX	PF+PEEK

6-2.Common Label

・ Label Language	English (See below for warning labels)
・ Warning Label Language	Japanese/English
・ CE Marking Label	None

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7.Utility

7-1.Signal Utility

7-1-1.CSS(Common)

・ I/F type	Terminal Block (WAGO)
・ I/F (Terminal Block) area	Cabinet

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8.Other Specifications table

Contents	Location
・ CSS signal interface comply to customer requirement.	SOLVENT Supply System(1)(2)(3) CSS(Common)
・ Indicator lamp specification comply to customer requirement.	CSB(Carrier Station Block)(1)
・ Alarm lamp specification comply to customer requirement.	Alarm Lamp
・ Each chemical line between the main system and the external unit will be protected by a pipe for the double containment.	PRB(Process Station Block)(4) COT CABINET
・ Detectable defect size: Up to 200um	WISC(11-11)(13-11)(15-11)
・ Four pieces of LOAD PORT LOCK OUT PINs will be arranged for each stage. One will be installed at the standard position for shipment, and the other three PINs will be the attachment.	CSB(Carrier Station Block)(1)
・ Equipment fixing brackets comply to customer requirement.	Safety
・ Add the label indicating the usage to the tip of the spinner drain pipe.	COT Series Drain System(1)
・ The FFU wind velocity will be able to be monitored with FDC.	Ambiance Sensor Option,Module Option
・ Add environment label on each equipment.	Common Label
・ Hardware/software of the flow rate stabilization of the Nozzle Bath Clean line corresponds.	BCT(12-1)(12-2)(13-1)(13-2)(15-1)(15-2) SOLVENT Supply System(1)(2)(3)
・ In order to improve NMA, following items have been applied. 1. Optimization for Nozzle Bath shape 2. Change nozzle surface treatment. 3. Nozzle Position change.	BCT(12-1)(12-2)(13-1)(13-2)(15-1)(15-2)
・ MPB constitution optimization.	PRB(Process Station Block)(4)
・ Adopt the countermeasure for decrease airborne particle from Long PRA.	PRB(Process Station Block)(4)
・ Exchange the cover on the PRB back block upper electric area.	PRB(Process Station Block)(4)
・ The fan for the internal air current control on PRB side maintenance door	PRB(Process Station Block)(4)

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・ Optimized pump sequence for bubble has been applied.	Software
・ Particle measures in the transfer arm has been applied.	Customer Special Specifications
・ The number of chiller is changed from 3ch to 4ch.	THC
・ THC will be provided by customer.	THC
・ Cover is added to WIS LED irradiation window.	WISC(11-11)(13-11)(15-11)

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If you have any question regarding your special specification, which is not specified in this specification document, please ask to our contact person.

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