Document No. GK317-0003-00

CONFIDENTIAL

Common to 3000 series

Operation Guide

SECS/GEM COMMUNICATION SPECIFICATION
(Only For the Machines with PC)

Revision of TRKB10K068. Please discard the previous version.

DISCO CORPORATION
Engineering R&D Division
Mar. 27, 2017

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INTRODUCTION

Purpose of this document

This technical report explains the SECS/GEM communication specification for DAD3000 series.

WARNING

To perform the operation properly and safely, follow the Manuals included with the machine as well as this document

This is a supplemental document explaining the operation and data settings for the special specification of the DAD3000 series standard machine.

1. Application

Introduction

This document is the SECS/GEM communicating interface specification for the DISCO's DAD3000 series dicers.

Application to GEM

This specification complies with the GEM (Generic Equipment Model) for communication and control of semiconductor manufacturing equipment in SEMI E30-0200A. This document describes the GEM detailed specification, which is necessary to mention here, the communication specification, which does not comply with the GEM, and the functions specific to the DAD3000 series.

2. Connections and Communication Parameters

Introduction

Physical connection method of this equipment differs depending on communication type, whether it is HSMS (Ethernet) or SECS-I (RS232C).

Summary of this section

Section No.	Title
2-1	Connections
2-2	Communication Parameters and FA Screens

2-1. Connections

RS232C communication

Connector of the equipment: Male, 9 pins

Ethernet communication

Connector of the equipment: 10 Base-T

2-2. Communication Parameters and FA Screens

Summary of this section

The screens to set the communication parameters differ depending on the communication type whether it is HSMS communication (Ethernet) or SECS- Ⅰ communication (RS232C).

Summary of this section

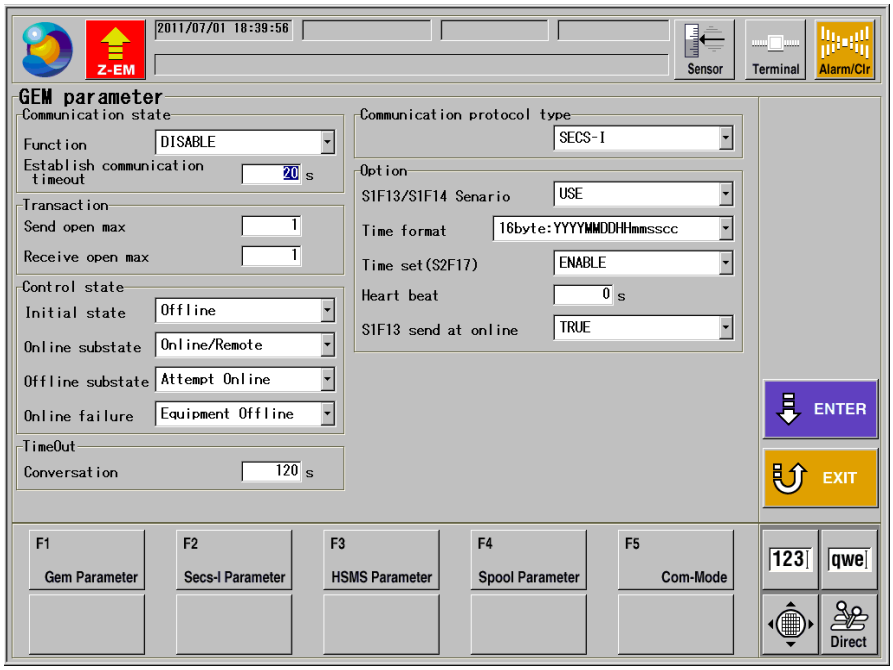
Section No.	Title
2-2-1	Factory automation screens
2-2-2	Network settings

2-2-1. Factory automation screens

Summary of this section

The factory automation screens are to determine the parameters specified in the SEMI GEM, SECS-I, and HSMS.

GEM PARAMETER screen



This section describes the display and input items on the GEM PARAMETER screen.

[Communication state] frame

Item	Description
Function	Select either to “ENABLE” or “DISABLE” the communication function. Direct entry editing is not possible.
Establish communication timeout	Set the communication establishment delay time value (range: 1 to 99 seconds).

[Communication protocol type] frame

Item	Description
Communication protocol type	Select the protocol to be used. Select either “SECS-I (SECS-protocol)” or “HSMS-SS (HSMS-SS protocol).” Direct entry editing is not possible.

NOTICE

If the protocol to be used is changed, restart the dicing saw

[Transaction] frame

Item	Description
Send open max	Set the maximum number of messages (range: 0 to 10) that can be opened at the same time when sending SECS messages. 0: Sending and receiving interleave can not be performed.
Receive open max	Set the maximum number of message (range: 0 to 10) that can be opened at the same time when receiving SECS messages. 0: Sending and receiving interleave can not be performed.

[Control state] frame

Set the control status when the system boots up at "Initial state", "Online substate" and "Offline substate".

Item	Description
Initial state	Offline: Initial state/Communication not possible, Substate is determined by OffLineSubState. Online: Initial state/Communication possible, Substate is determined by OnLineSubState
Online substate	Online/Local: OnLine connection, sets to local mode. Online/Remote: OnLine connection, sets to Remote mode.
Offline substate	Equipment Offline: Sets to the equipment OffLine state. Attempt Online: Sets to the Online connection standby state. Host Offline: Sets to the HostOffline state.

"Online failure" sets the control status when online fails.

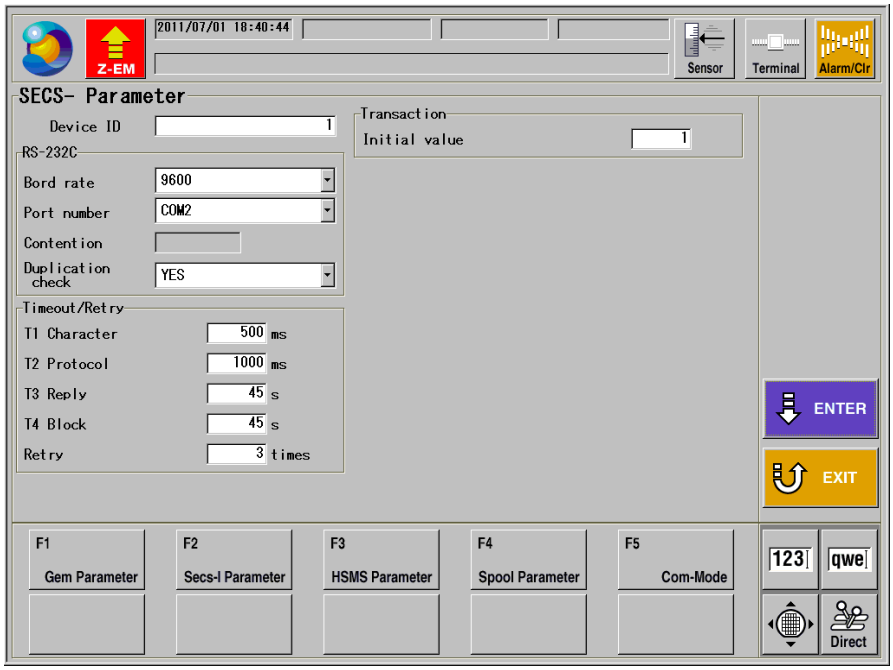
Item	Description
Online failure	Equipment Offline: Sets to the equipment OffLine state. Host Offline: Sets to the HostOffline state.

[TimeOut] frame

Item	Description
Conversation	Set the conversation time out value. (range: 1 to 120).

[Option] frame

Item	Description
S1F13/S1F14 Scenario	Set whether the GEM conformity S1F13/F14 scenario operation will be performed on the host computer. This exits as support for host computers that do not support the communication establishment operation scenario. Select either “PASS (do not use)” or “USE (use).”
Time format	Set the data type to handle the date/time. 12Byte: YYMMDDHHmmss (Uses the definition of the old SECS.) 16Byte: YYYYMMDDHHmmsscc (Uses the definition of the new SECS (Y2K compliant).)
Time set (S2F17)	Set whether time matching will be performed when Online is established. Enable: Performs time matching using S2F17. Disable: Does not perform time matching.
Heart beat	Set whether connection confirmation will be performed periodically using S1F1 (range: 0 to 65,535 seconds). If specified at 0 second, this item will not be used.
S1F13 send at online	Will be sent at an arbitrary timing. Set whether the S1F13 communication establishment will be performed previous to this. The initial state of communication establishment (S1F13) to OnLine establishment (S1F1) is not included in this. TRUE: Performs S1F13 scenario. FALSE: Does not perform S1F13 scenario.



This section describes the display and input items related to the SECS-I protocol on the SECS-PARAMETER screen.

[Device ID] item

This is an input item for the machine device ID number (range: 0 to 32767), which is editable.

[RS-232C] frame

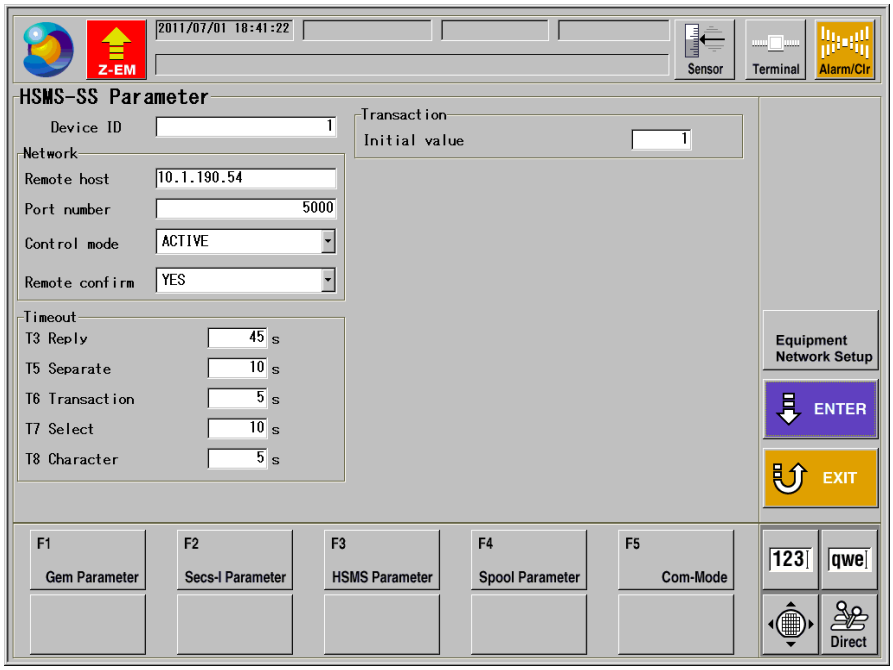
Item	Description
Baud rate	Select the serial communication speed (options: 300, 600, 1200, 2400, 4800, 9600, 19200).
Port number	Select the serial communication port number (options: COM2, COM3, COM4, COM5, COM10).
Contention	Displays the resolution set value for transmission conflict (fixed to “Master”).
Duplication check	Select either “YES (valid)” or “NO (invalid)” for the duplicate block check function.

[Timeout/Retry] frame

Item	Description
T1 Character	Set the timeout value between characters (range: 0.1 to 10 seconds).
T2 Protocol	Set the protocol timeout value (range: 0.2 to 25 seconds).
T3 Reply	Set the reply timeout value (range: 1 to 120 seconds).
T4 Block	Set the timeout value between blocks (range: 1 to 120 seconds).
Retry	Set the send retry value (range: 0 to 31 times).

[Transaction] frame

Item	Description
Initial value	Set the initial value of the system byte transaction ID in the SECS-1 header.



This section describes the display and input items related to the HSMS-SS protocol on the HSMS-SS PARAMETER screen.

[Device ID] item

This is an input item for the machine device ID number (range: 0 to 32767), which is editable.

[Network] frame

Item	Description
Remote host	Enter connected host name (TCP/IP host file defined name) or IP address (range: "0.0.0.0" to "256.256.256.256").
Port number	Set service port or well-known socket number (range: 0 to 32767), which provides HSMS protocol service. Normally, avoid using 0 to 5,000 and reserve the area.
Control mode	Set the connection mode to either “ACTIVE (active connection)” or “PASSIVE (passive connection).” Make it a different setting to the connected host. Host (Active) → Equipment (Passive) Host (Passive) → Equipment (Active)
Remote confirm	Set the replacement connection mode to either “YES” (Valid) or “NO” (invalid). If the replacement connection mode is set with Host (Passive) → Equipment (Passive) in [Control mode], both the host and equipment will continuously wait for communication connection from the Active setting. In this case, both the host and equipment will not generate an error because of the normal status. To avoid this, the GEM/HSMS has a function that uses T5 time-out time. If the T5 time-out exceeds the waiting time when the equipment is set to Passive, GEM/HSMS will temporarily try connecting with the equipment set to Active. This function will not work if the mode is set to Host (Active) → Equipment (Active), because a connection failure will occur.

[Timeout] frame

Item	Description
T3 Reply	Set the reply timeout value (range: 1 to 120 seconds).
T5 Separate	Set the separate timeout value (range: 1 to 240 seconds).
T6 Transaction	Set the transaction timeout value (range: 1 to 240 seconds).
T7 Select	Set the select timeout value (range: 1 to 240 seconds).
T8 Character	Set the timeout value between characters (range: 1 to 120 seconds).

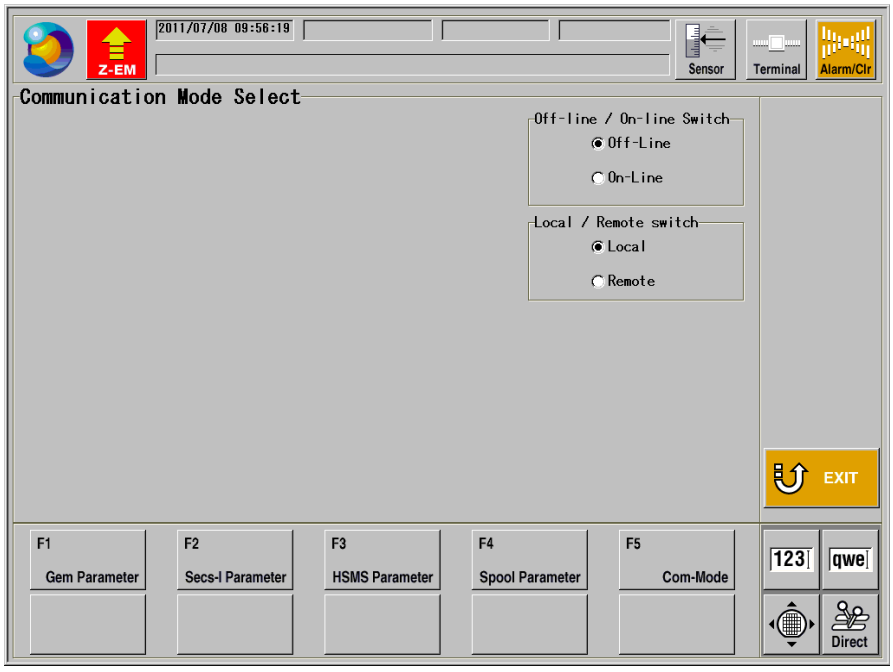
[Transaction] frame

Item	Description
Initial value	Set the initial value of the system byte transaction ID in the HSMS header.

NOTICE

If "Control mode" in the [Network] frame is set as “PASSIVE,” it is not necessary to set "Port number" which is the IP address of the host

COMMUNICATION MODE SELECT screen



The display and input operation on the COMMUNICATION MODE SELECT screen are described here.

[Off-Line/On-Line Switch] frame

Switch the communication state between the equipment and host.

Item	Description
Off-Line	Terminates the host communication.
On-Line	Establishes the host communication and maintain its state.

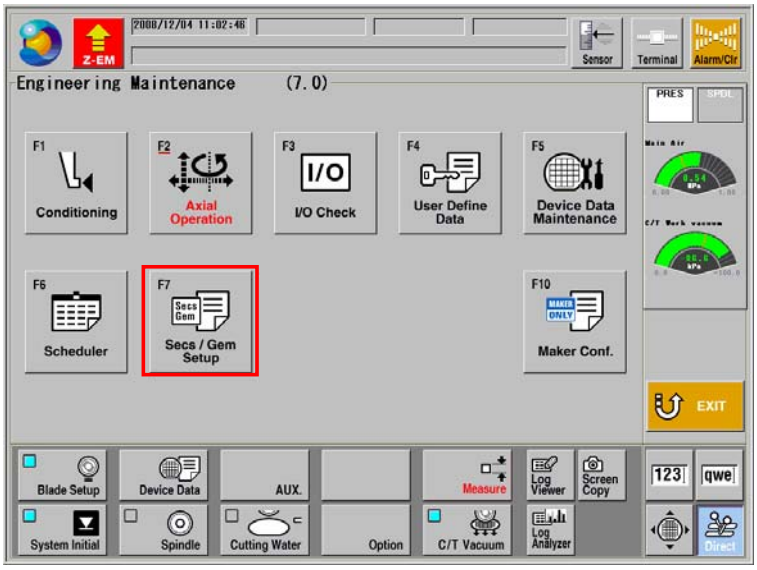
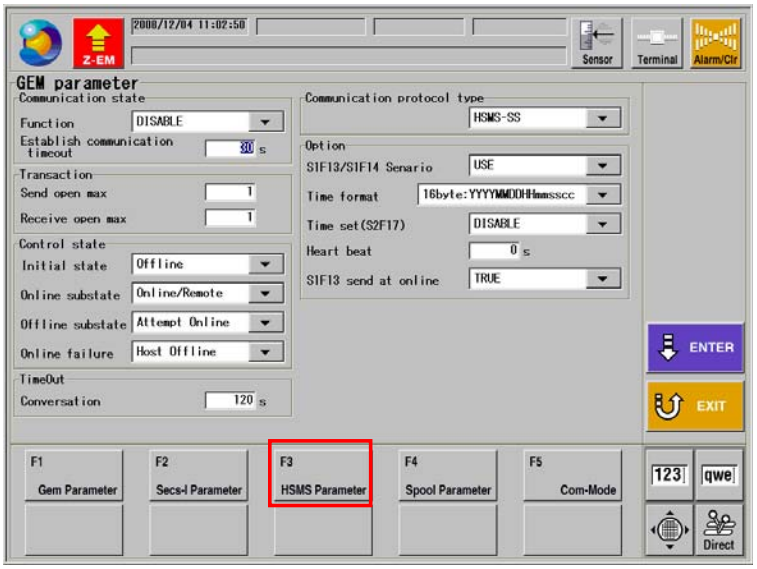
[Local/Remote switch] frame

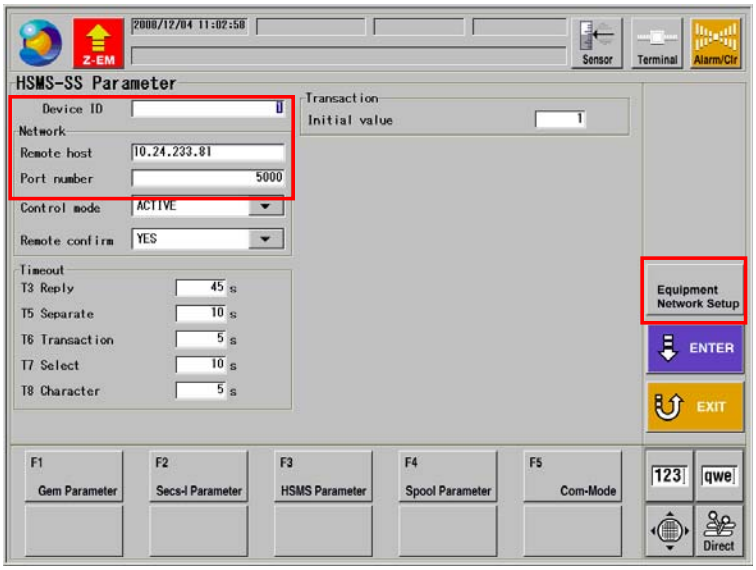
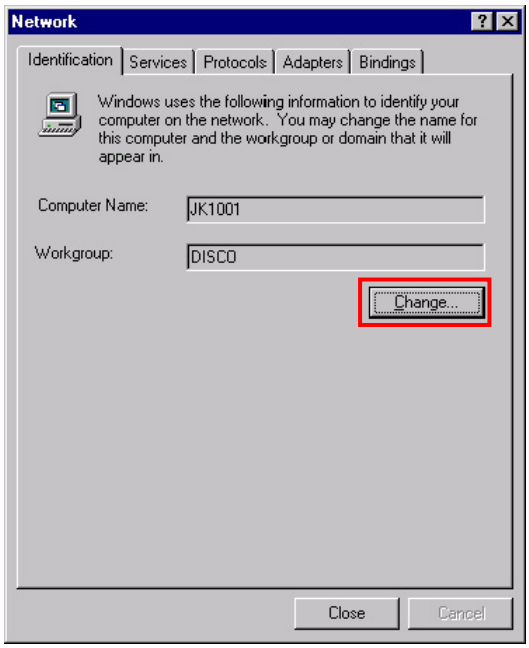
Switch the mode of the OnLine state.

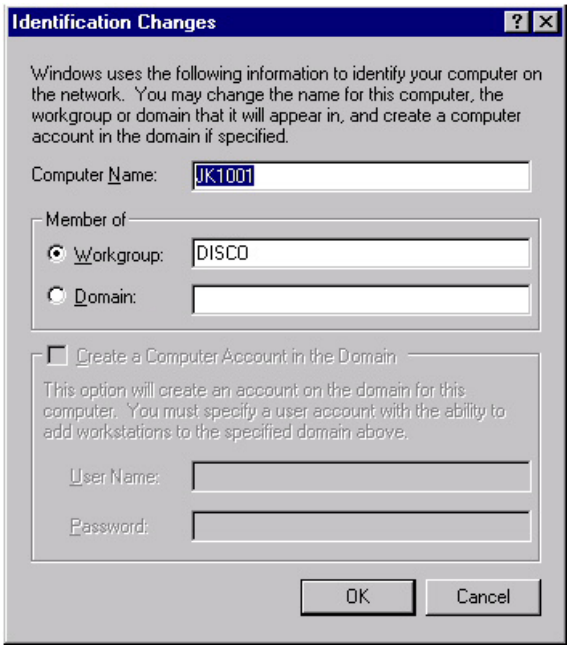
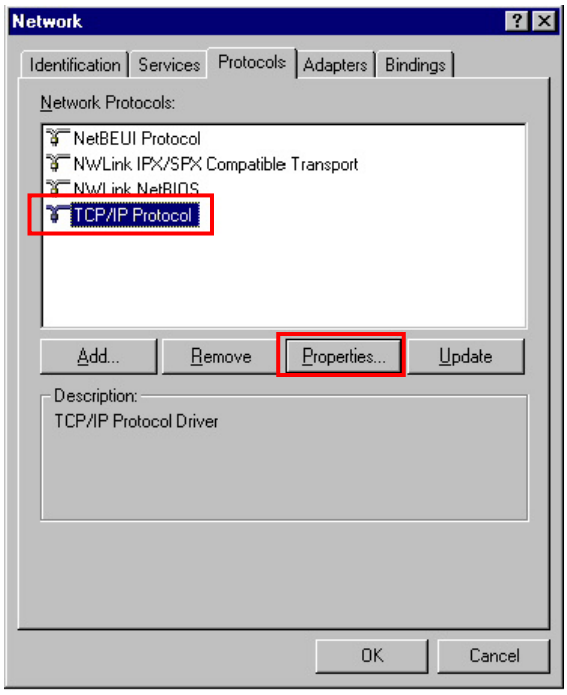
Item	Description
Local	This mode mainly uses the equipment in stand-alone operation. Events and alarms are received from the host.
Remote	This mode performs equipment operation according to the operation instructions from the host.

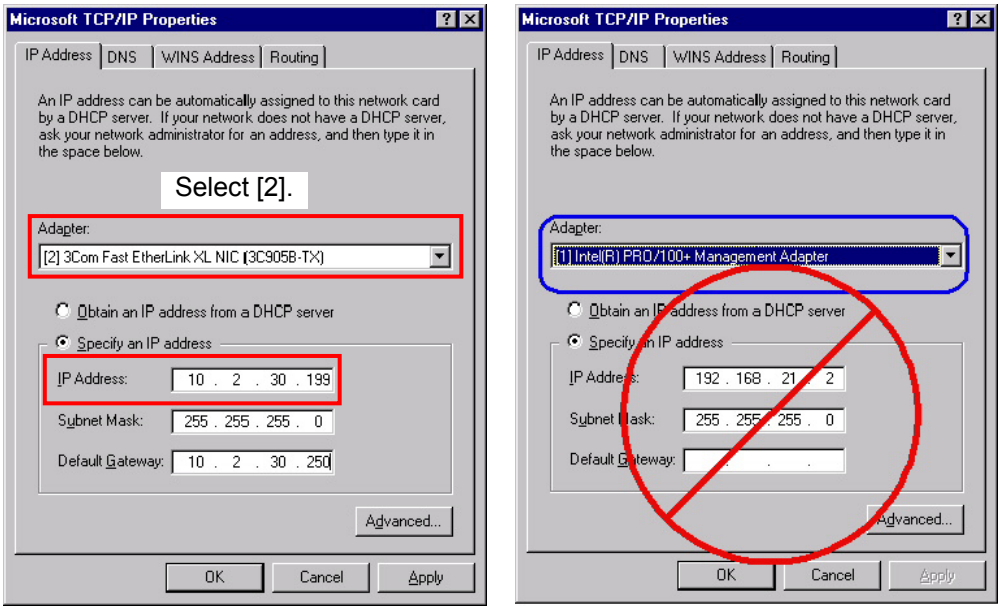
2-2-2. Network settings

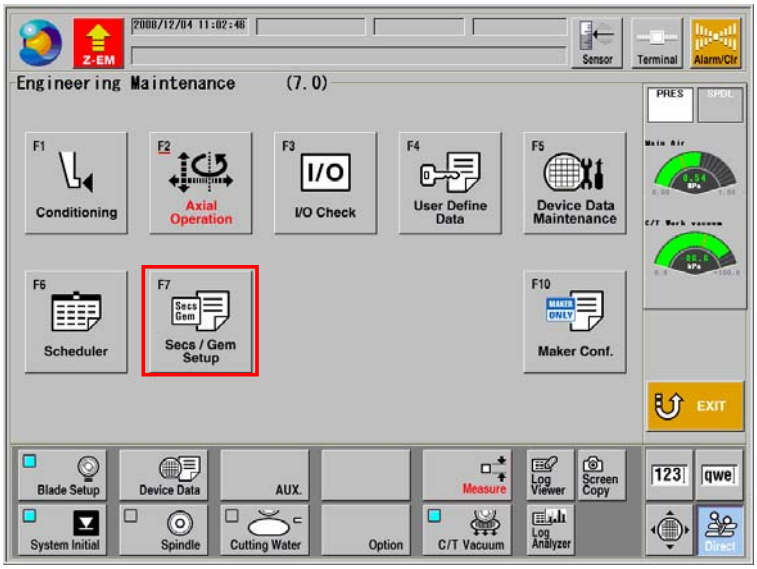
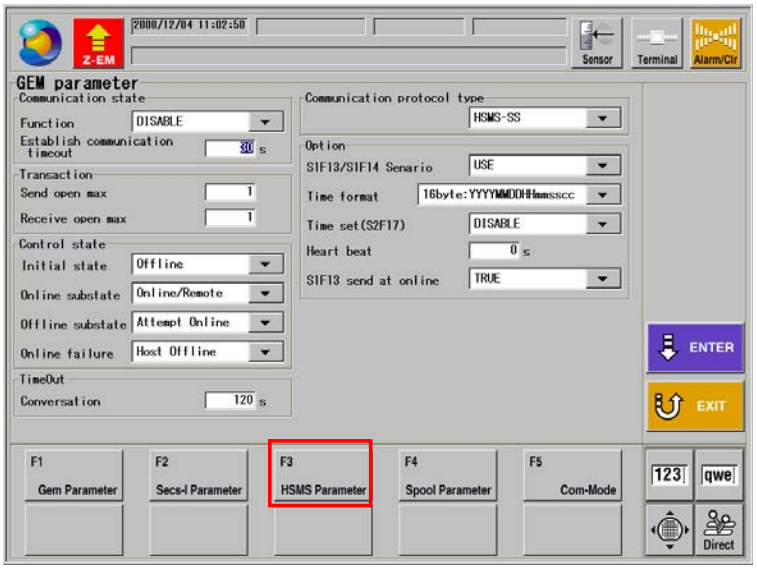
Network setting [In the case of Windows NT]

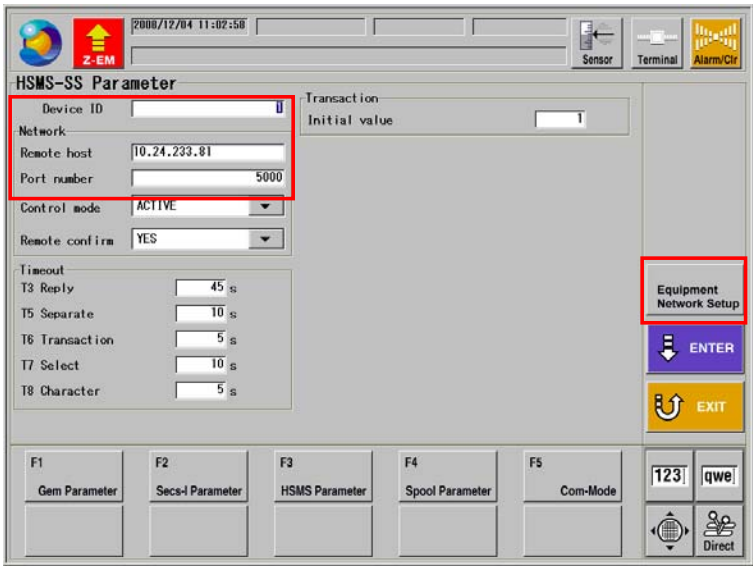
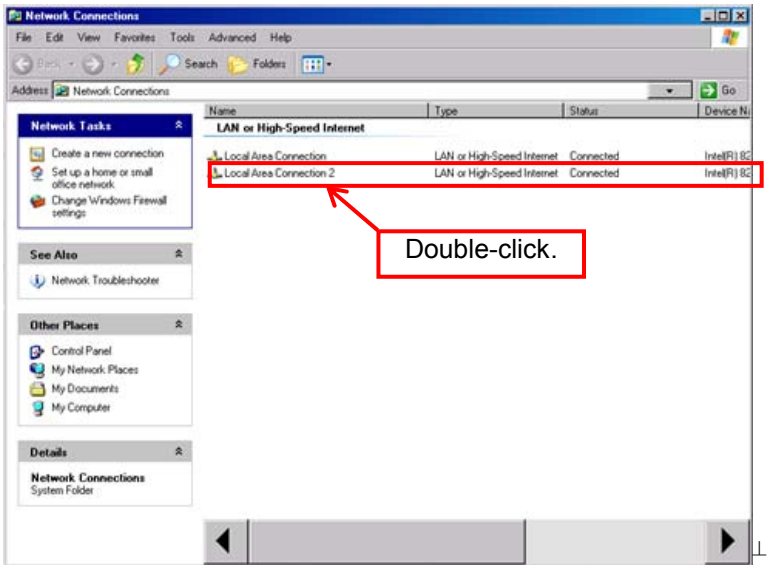
Step No.	Procedure
1	Press the <F7> button on the MAIN MENU screen to call up the ENGINEERING MAINTENANCE screen [7.0].
2	Press the <F7> button on the ENGINEERING MAINTENANCE screen to call up the GEM PARAMETER screen. 
3	Confirm that "DISABLE" is set at item, "Function" of "Communication state" frame. (If "DISABLE" is not set, the <Equipment Network Setup> button will not appear on the HSMS-SS PARAMETER screen.) Then press the <F3> button to call up the HSMS-SS PARAMETER screen. 

<table>
<tr><th>Step No.</th><th colspan="2">Procedure</th></tr>
<tr><td>4</td><td colspan="2">Set the items shown below on the HSMS-SS PARAMETER screen, then press the <Equipment Network Setup> button.
 
</td></tr>
<tr><td rowspan="3"></td><td>Device ID</td><td>Enter the machine No.</td></tr>
<tr><td>Remote host</td><td>Default setting: 10.24.233.81
* Change if necessary.</td></tr>
<tr><td>Port number</td><td>Set as "5***." (**** shows the machine No. Specify as "037" or the like.)</td></tr>
<tr><td>5</td><td colspan="2">Select the "Identification" tab from the "Network" dialog box and press the <Change> button.
 
</td></tr>
</table>

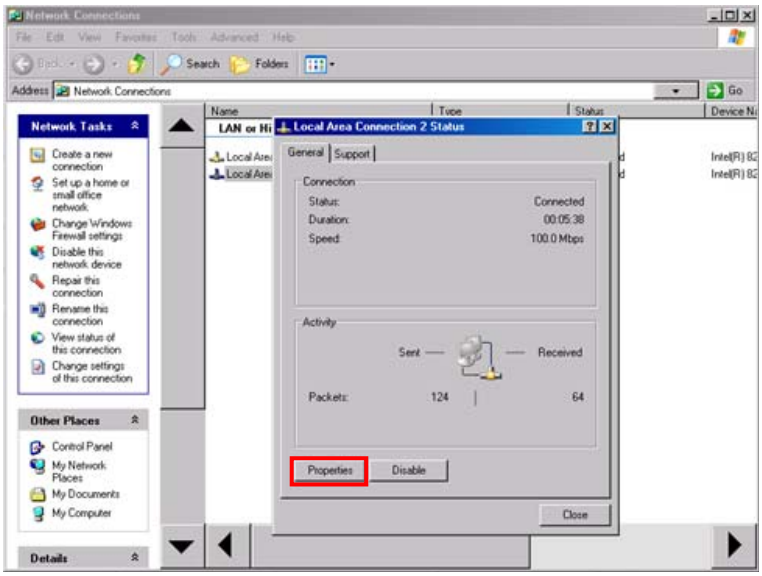
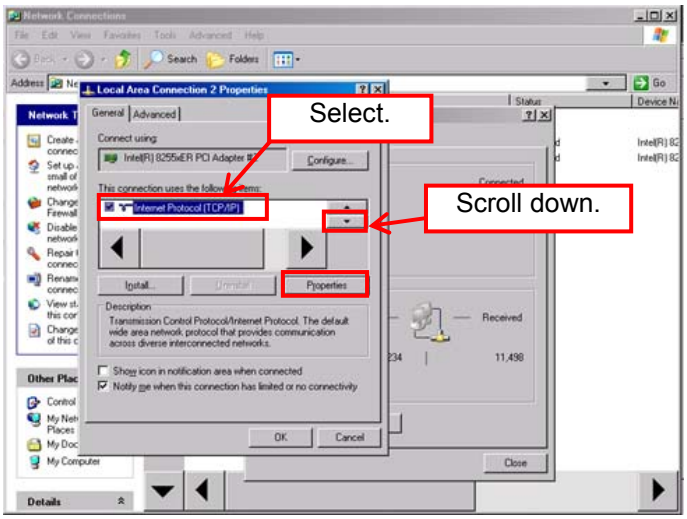
<table>
<tr><th>Step No.</th><th colspan="2">Procedure</th></tr>
<tr><td>6</td><td colspan="2">Specify the items below into the "Identification Changes" dialog box and press the <OK> button.
 
</td></tr>
<tr><td></td><td>Computer Name</td><td>The default data is the machine model name. No need to change.</td></tr>
<tr><td></td><td>Member of</td><td>Set in accordance with the customer's status of use.</td></tr>
<tr><td>7</td><td colspan="2">Select the "Protocols" tab from the "Network" dialog. And then, select "TCP/IP Protocol" from the list of "Network Protocols" and press the <Properties...> button.
 
</td></tr>
</table>

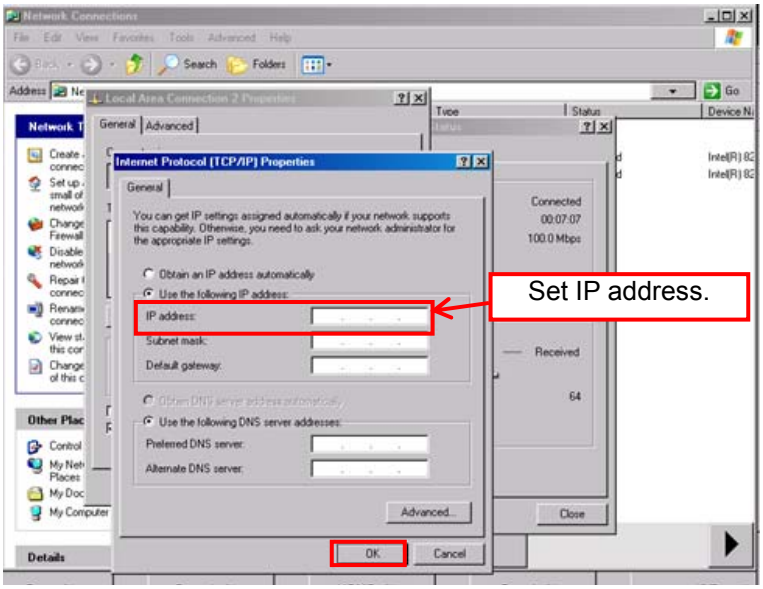
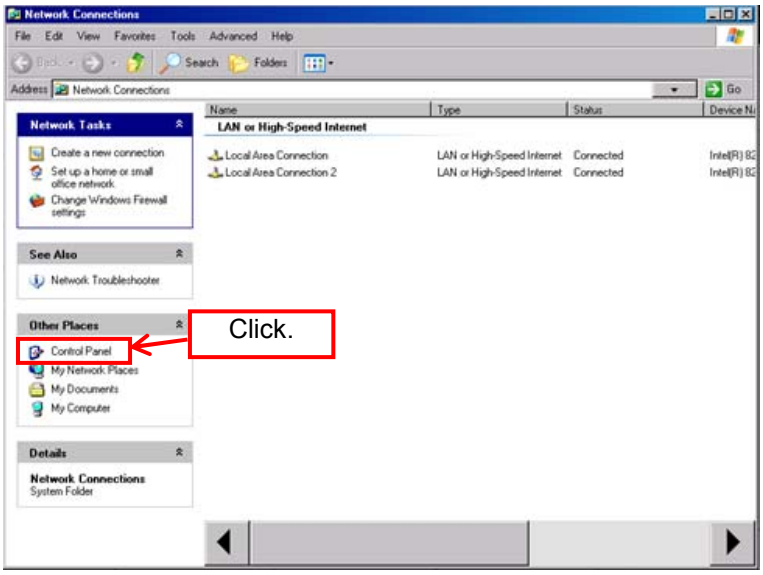
<table>
<tr><th>Step No.</th><th colspan="2">Procedure</th></tr>
<tr><td>8</td><td colspan="2">Select "IP Address" tab from the "Microsoft TCP/IP Properties" dialog. Specify the items below and press the <OK> button.
 
</td></tr>
<tr><td></td><td>Adapter</td><td>Select "[2] 3Com Fast EtherLink XL NIC [3C9058-TX]."
<u>Do not specify "IP Address" with [1] selected.</u></td></tr>
<tr><td></td><td>IP Address</td><td>After selected [2] at "Adapter," specify the IP address according to customer's status of use. Do not change the IP address (192.168.21.2) with [1] selected at "Adapter." If changed, the machine cannot boot up.</td></tr>
<tr><td>9</td><td colspan="2">Setting has been finished. After you press the <OK> button, the message from Windows confirming system restart appears. However, press the <Cancel> button at that time. Then, reboot the machine manually.</td></tr>
</table>

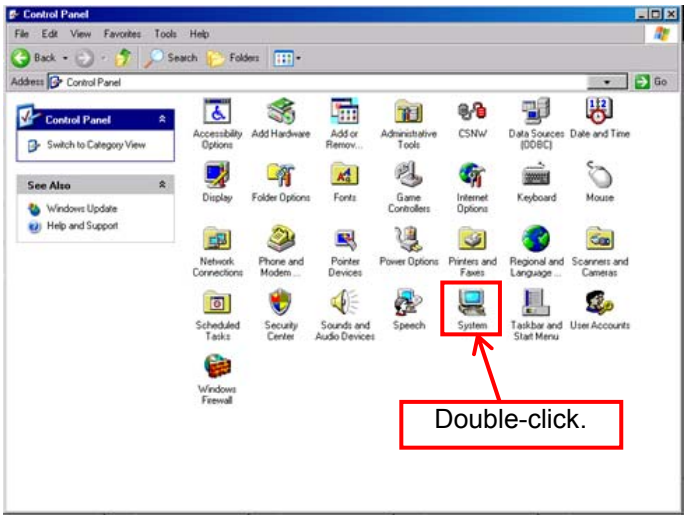
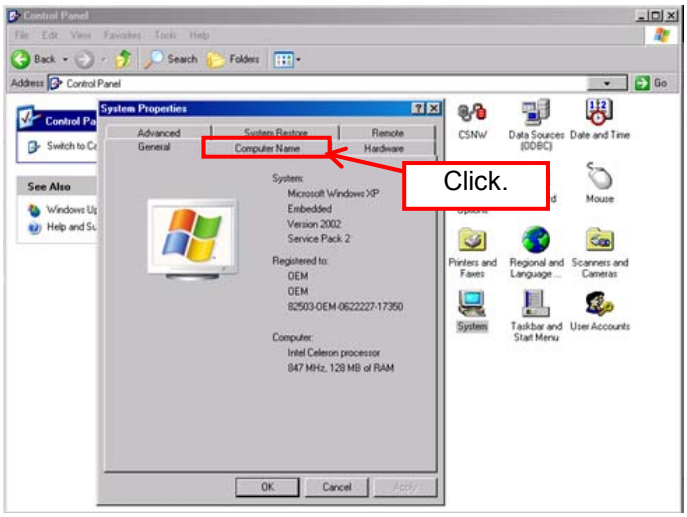
Step No.	Procedure
1	Press the <F7> button on the MAIN MENU screen to call up the ENGINEERING MAINTENANCE screen [7.0].
2	Press the <F7> button on the ENGINEERING MAINTENANCE screen to call up the GEM PARAMETER screen. 
3	Confirm that "DISABLE" is set at item, "Function" of "Communication state" frame. (If "DISABLE" is not set, the <Equipment Network Setup> button will not appear on the HSMS-SS PARAMETER screen.) Then press the <F3> button to call up the HSMS-SS PARAMETER screen. 

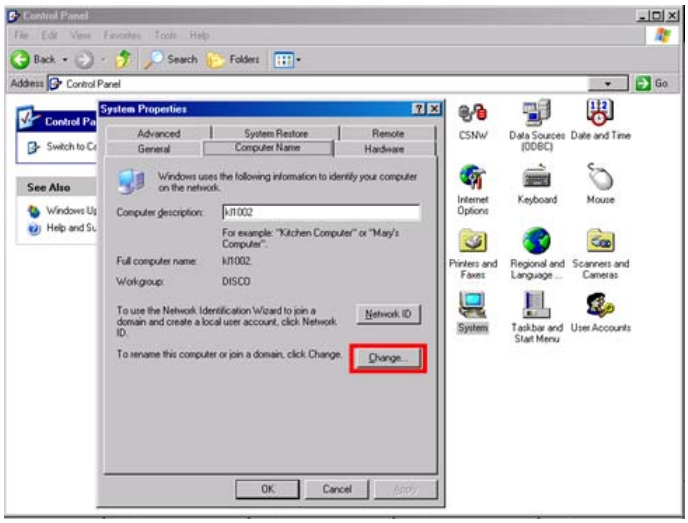
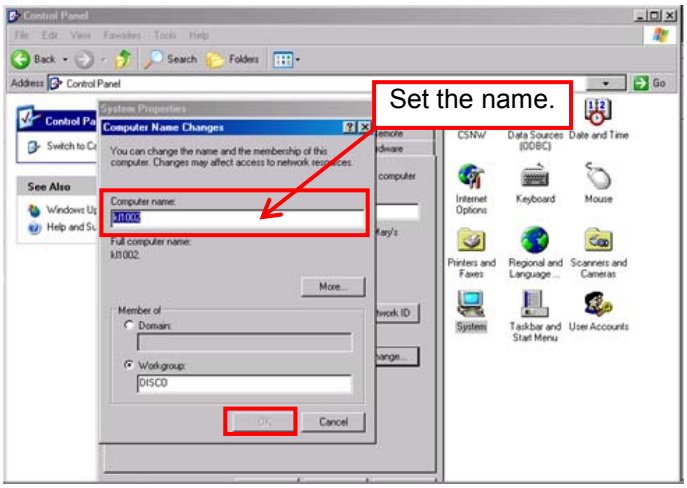
<table>
<tr><th>Step No.</th><th colspan="2">Procedure</th></tr>
<tr><td>4</td><td colspan="2">Set the items shown below on the HSMS-SS PARAMETER screen, then press the <Equipment Network Setup> button.
 
</td></tr>
<tr><td rowspan="3"></td><td>Device ID</td><td>Enter the machine No.</td></tr>
<tr><td>Remote host</td><td>Default setting: 10.24.233.81
* Change if necessary.</td></tr>
<tr><td>Port number</td><td>Set as "5***." (**** shows the machine No. Specify as "037" or the like.)</td></tr>
<tr><td>5</td><td colspan="2">Double-click "Local Area Connection 2" on the Network Connections window.
 

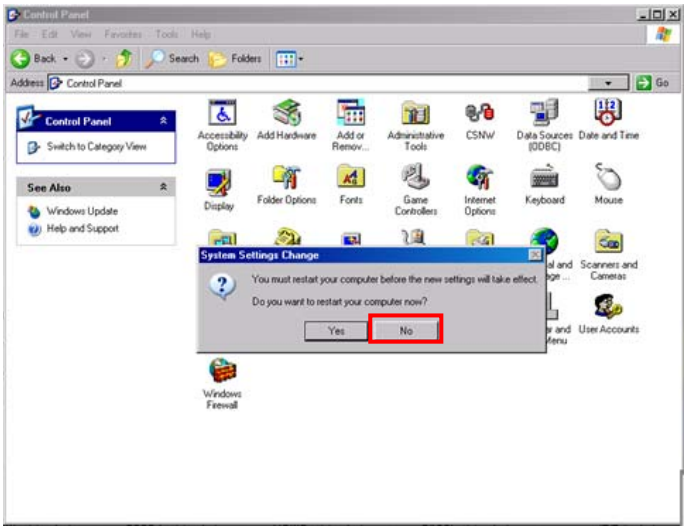
・The Local Area Connection 2 Status window is displayed.</td></tr>
</table>

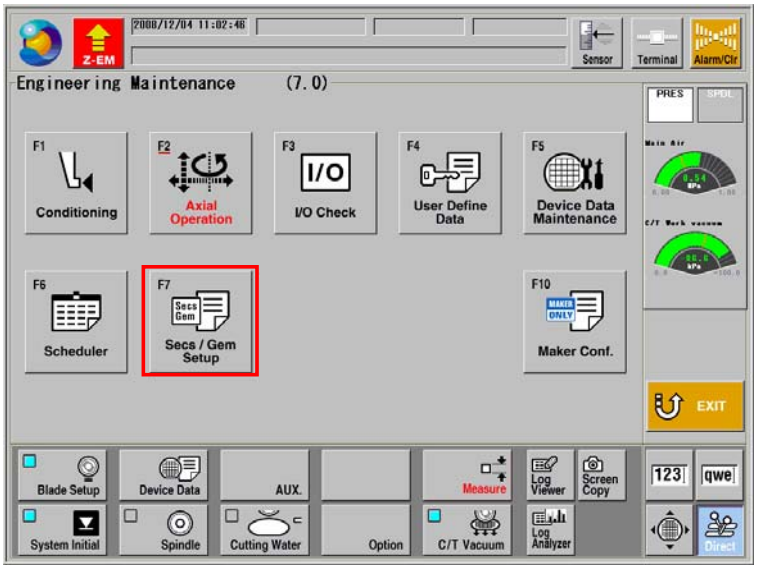
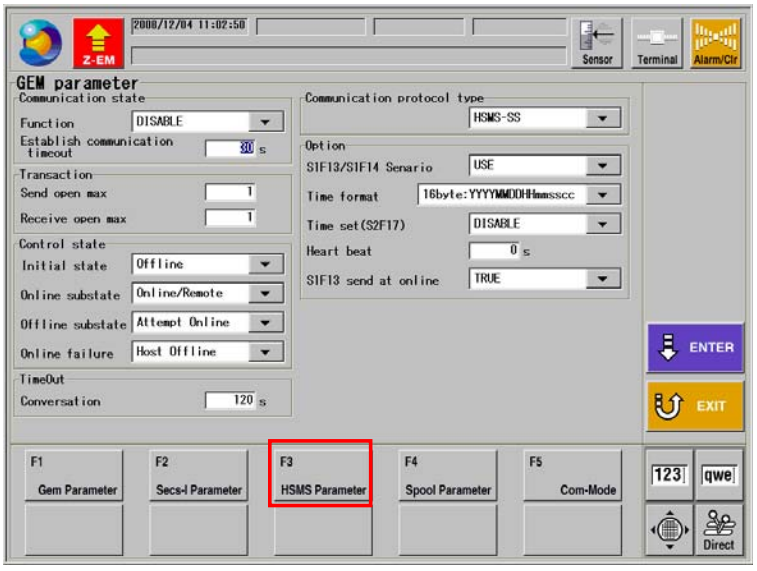
Step No.	Procedure
6	Press the <Properties> button. 
7	By pressing the <▼> button, search and select "Internet Protocol [TCP/IP]." Then press the <Properties> button.  ・The Internet Protocol [TCP/IP] Properties window is displayed.

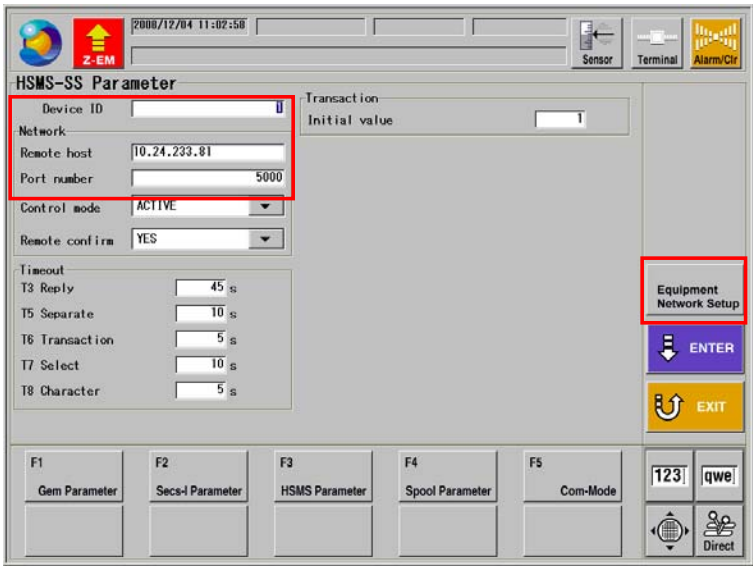
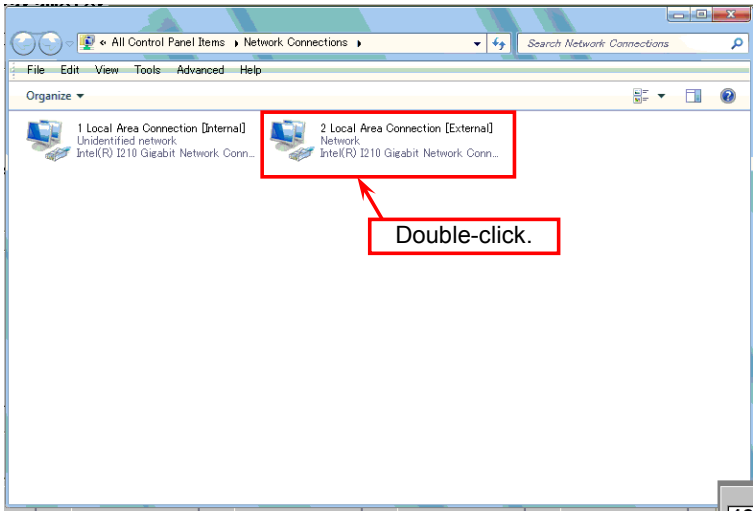
Step No.	Procedure
8	Set IP address, and press the <OK> button. The IP address differs depending on communications server to be connected. Communications server: 10.24.233.*** ("***" indicates the machine No.) In the case of the machine No.37, "37" is indicated. Press the <OK> button to close other windows. 
9	Next, set the PC name. Click "Control Panel" on the Network Connections window. 

Step No.	Procedure
10	Double-click "System" on the Control Panel window. 
11	Select the "Computer Name" tab. 

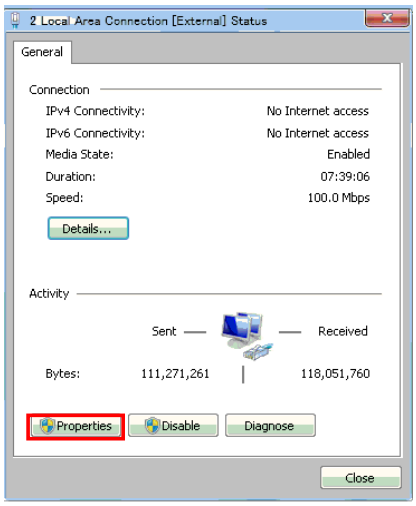
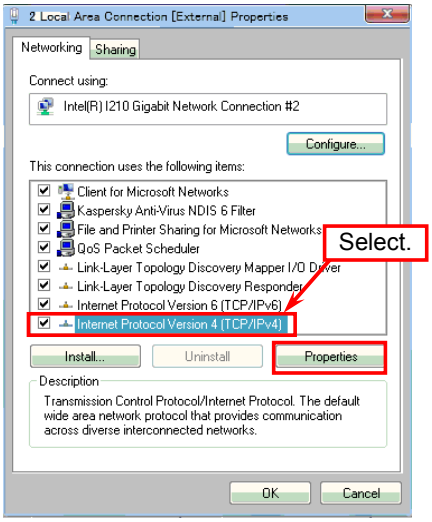
Step No.	Procedure
12	Press the <Change> button. 
13	Enter the PC name by using the direct operation keyboard, and press the <OK> button. Set the PC name as shown below. **No-***** ("***" indicates the machine No. Set as "037" or the like.) 

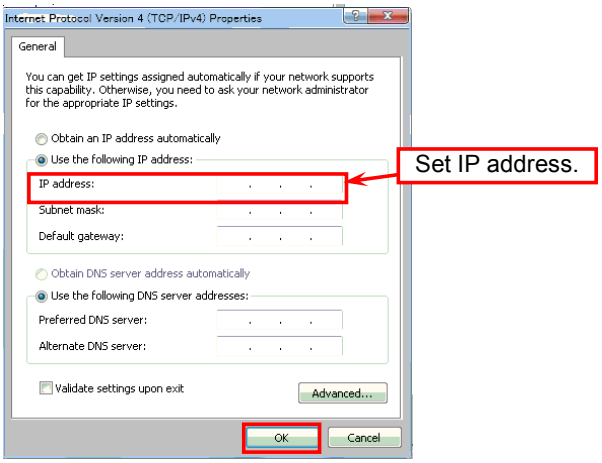
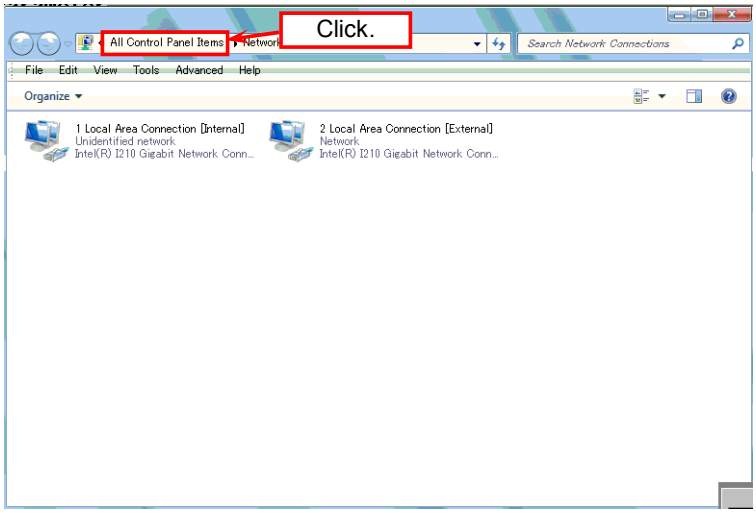
Step No.	Procedure
14	If the PC name is changed, the following dialogue box is displayed. Press the <No> button. 
15	Close other windows. This completes the setting. Restart the machine.

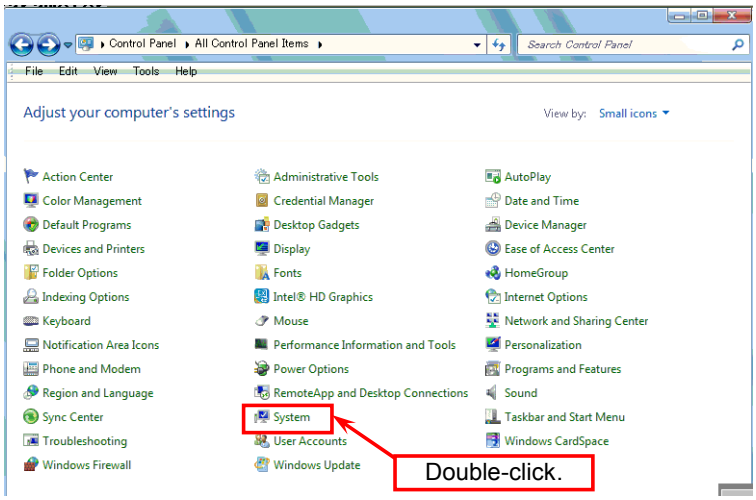
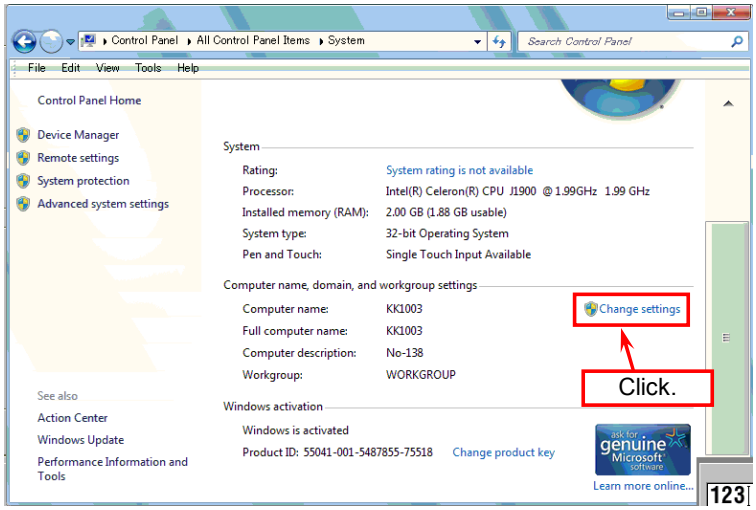
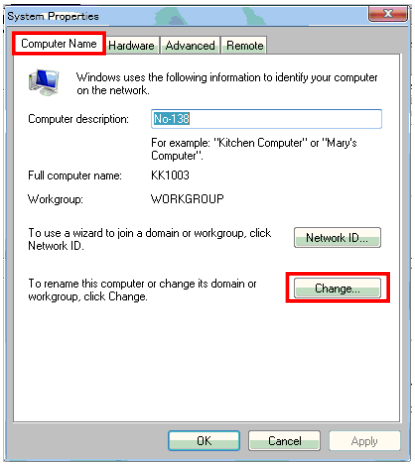
Step No.	Procedure
1	Press the <F7> button on the MAIN MENU screen to call up the ENGINEERING MAINTENANCE screen [7.0].
2	Press the <F7> button on the ENGINEERING MAINTENANCE screen to call up the GEM PARAMETER screen. 
3	Confirm that "DISABLE" is set at item, "Function" of "Communication state" frame. (If "DISABLE" is not set, the <Equipment Network Setup> button will not appear on the HSMS-SS PARAMETER screen.) Then press the <F3> button to call up the HSMS-SS PARAMETER screen. 

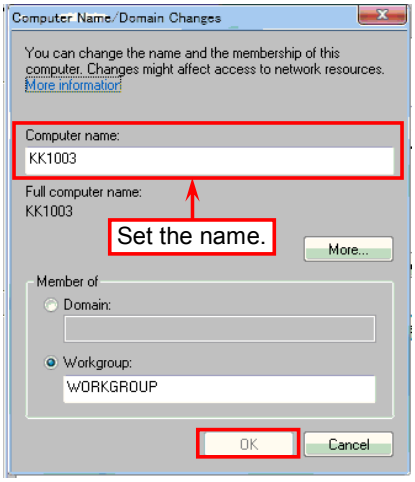
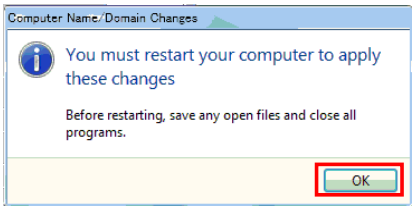
<table>
<tr><th>Step No.</th><th colspan="2">Procedure</th></tr>
<tr><td>4</td><td colspan="2">Set the items shown below on the HSMS-SS PARAMETER screen, then press the <Equipment Network Setup> button.
 
</td></tr>
<tr><td></td><td>Device ID</td><td>Enter the machine No.</td></tr>
<tr><td></td><td>Remote host</td><td>Default setting: 10.24.233.81
* Change if necessary.</td></tr>
<tr><td></td><td>Port number</td><td>Set as "5***." (**** shows the machine No. Specify as "037" or the like.)</td></tr>
<tr><td>5</td><td colspan="2">Double-click "2 Local Area Connection [External]" on the Network Connections window.
* Do not change the setting of "1 Local Area Connection [Internal]" by mistake.
 

・The "2 Local Area Connection [External] Status" window is displayed.</td></tr>
</table>

Step No.	Procedure
6	Press the <Properties> button. 
7	Search and select "Internet Protocol Version 4 [TCP/IPv4]," and then press the <Properties> button.  ・The "Internet Protocol Version 4 [TCP/IPv4] Properties" window is displayed.

Step No.	Procedure
8	Set IP address, and press the <OK> button. The IP address differs depending on communications server to be connected. Communications server: 10.24.233.*** ("***" indicates the machine No.) In the case of the machine No.37, "37" is indicated. Press the <OK> button to close other windows. 
9	Next, set the PC name. Click "All Control Panel Items." 

Step No.	Procedure
10	Double-click "System" on the "All Control Panel Items" window. 
11	Click "Change settings." 
12	Press the <Change> button on the "Computer Name" tab. 

Step No.	Procedure
13	Enter the PC name by using the direct operation keyboard, and press the <OK> button. Set the PC name as shown below. **No-***** ("***" indicates the machine No. Set as "037" or the like.) 
14	Once the PC name is changed, the following dialogue box is displayed. Press the <OK> button. 
15	Close other windows. This completes the setting. Restart the machine.

3. Related SEMI Standards

Introduction

This equipment complies with the SEMI standard listed in Section 3-1.

3-1. Related SEMI Standards

Summary of this section

This specification complies with the following standards:

SEMI Standard	Title
E4-0699	SEMI Equipment Communications Standard 1 Message Transfer (SECS-I)
E5-0600	SEMI Equipment Communications Standard 2 Message Content (SECS-II)
E37-95	High-Speed SECS Message Services (HSMS) Generic Services
E37.1-96	High Speed Message Services HSMS-SS)
E30-0200A	Generic Model for Communications and Control of Manufacturing Equipment (GEM)

3-2. Supplemental Explanation

Data format of dates

ECID = 4010 (Time Format) is used for the data format of date, and 12 digits or 16 digits can be selected to use.

About protocol

Item	Description
Initial value of block number	Send: Starts from 1. Receive: Handles as normal even if it is 0.
Interleave	Both of sender and receiver support interleave. The maximum value of transaction can be set.
Block interleave	Interruption of other transaction's block between the blocks of multi-block message transmission/reception is not permitted.
Management of system byte	Reply: Copies the system byte of the primary message directly. Send: Increments one each from the predetermined value.
Duplicate block detection	A duplicate block can be detected by setting.

4. GEM Compliance Statement

Introduction

The machines satisfy the fundamental GEM requirements, and the performance is realized in accordance with all the applicable definitions, explanations, and requirements specified in these standards.

Therefore, the equipment constantly exhibits behaviors for the functions that comply with those specified in the GEM.

Summary of this section

Section No.	Title
4-1	GEM Compliance Statement

4-1. GEM Compliance Statement

GEM compliance statement

GEM COMPLIANCE STATEMENT		
Fundamental GEM Requirements	Implemented	GEM-Compliant
State Models	■Yes ☐No	■Yes (*1) ☐No
Equipment Processing States	■Yes ☐No	
Host-Initiated S1,F13/F14 Scenario	■Yes ☐No	
Event Notification	■Yes ☐No	
On-Line Identification	■Yes ☐No	
Error Messages	■Yes ☐No	
Control (Operator-initiated)	■Yes ☐No	
Documentation	■Yes ☐No	
Additional Capabilities	Implemented	GEM-Compliant (*2)
Establish Communications	■Yes ☐No	■Yes ☐No
Dynamic Event Report Configuration	■Yes ☐No	■Yes ☐No
Variable Data Collection	■Yes ☐No	■Yes ☐No
Trace Data Collection	■Yes ☐No	■Yes ☐No
Status Data Collection	■Yes ☐No	■Yes ☐No
Alarm Management	■Yes ☐No	■Yes ☐No
Remote Control	■Yes ☐No	■Yes ☐No
Equipment Constants	■Yes ☐No	■Yes ☐No
Process Program Management	■Yes ☐No	■Yes ☐No
Material Movement	■Yes ☐No	■Yes ☐No
Equipment Terminal Services	■Yes ☐No	■Yes ☐No
Clock	■Yes ☐No	■Yes ☐No
Limits Monitoring	■Yes ☐No	■Yes ☐No
Spooling	■Yes ☐No	■Yes ☐No
Control (Host-initiated)	■Yes ☐No	■Yes ☐No

(*1) Do not mark YES unless all fundamental GEM requirements are implemented and GEM-compliant.

(*2) Additional capabilities may not be marked with GEM-compliant unless the fundamental GEM requirements are GEM-compliant.

5. State Control

Introduction

The equipment transfers to the states described below depending on their respective conditions.

- Communication State
- Control State
- Equipment Processing State
- Port State

Summary of this section

Section No.	Title
5-1	Communication State
5-2	Control State
5-3	Equipment Processing State
5-4	Port State

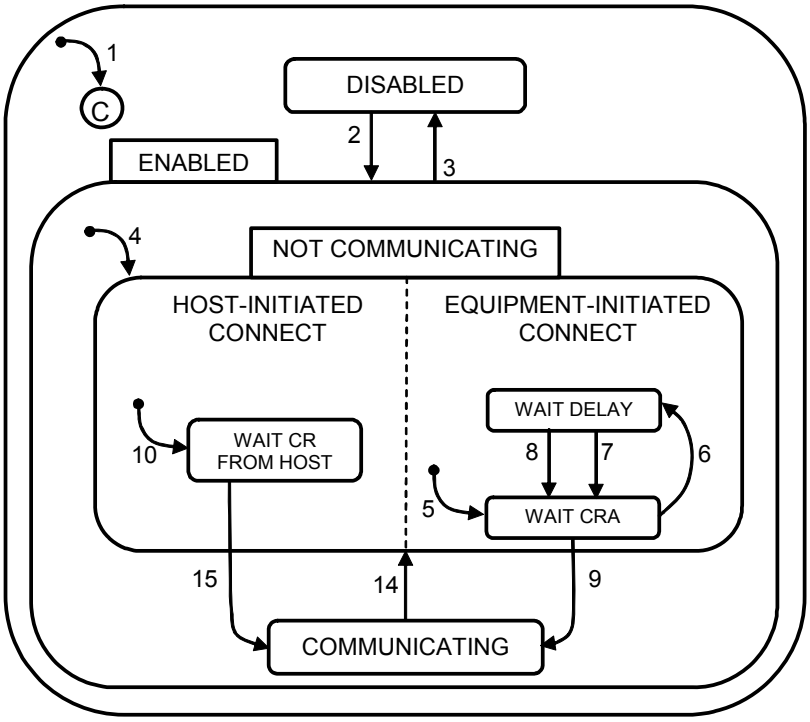
5-1. Communication State

Summary of this section

Section No.	Title
5-1-1	Communications state diagram
5-1-2	Descriptions of the communication states
5-1-3	Communications state transition table

5-1-1. Communications state diagram

Communications state diagram



5-1-2. Descriptions of the communication states

DISABLED

The DISABLED state is a possible system default. In this state, SECS-II communication with a host computer is nonexistent. If the operator switches from ENABLED to DISABLED, all SECS-II communications immediately stop. Any messages queued to send shall be discarded, and all further action on any open transactions and conversations shall be terminated.

ENABLED

The ENABLED state is a possible system default. ENABLED has two substates, COMMUNICATING and NOT COMMUNICATING. Whenever communications are enabled, either during system initialization or through operator selection, the substate of NOT COMMUNICATING is active until communications are formally established.

5-1-3. Communications state transition table

Communications state transition table

No.	Current State	Trigger	New State	Action	Comment
1	(Entry to COMMUNICA-TIONS)	System initialization.	System Default	None.	The system default may be set to DISABLED or ENABLED.
2	DISABLED	Operator switches from DISABLED to ENABLED	ENABLED	None.	SECS-II communications are enabled.
3	ENABLED	Operator switches from ENABLED to DISABLED	DISABLED	None.	SECS-II communications are prohibited.
4	(Entry to ENABLED)	Any entry to ENABLED state.	NOT COMMUNI-CATING	None.	May enter from system initialization to ENABLED or through operator switch to ENABLED.
5	(Entry to EQUIPMENT-INITIATED CONNECT)	(Any entry to NOT COMMUNICATIN G)	WAIT CRA	Initialize communications. Set CommDelay timer "expired." Send S1, F13.	Begin the attempt to establish communications.
6	WAIT CRA	Connection transaction failure.	WAIT DELAY	Initialize CommDelay timer. Dequeue all messages queued to send.	If appropriate, dequeued messages shall be placed in spool buffer in the order generated. Wait for timer to expire.
7	WAIT DELAY	CommDelay timer expired.	WAIT CRA	Send S1, F13	Wait for S1, F14. May receive S1, F13 from Host.
8	WAIT DELAY	Received a message other than S1, F13.	WAIT CRA	Discard message. No replay. Set CommDelay timer "expired." Send S1, F13.	Indicates opportunity to establish communications.
9	WAIT CRA	Received expected S1, F14 with COMMACK = 0.	COMMUNI-CATING	None.	Communications are established.
10	(Entry to HOST-INITIATED CONNECT)	(Any entry to NOT COMMUNICA-TING)	WAIT CR FROM HOST	None.	Wait for S1, F13 from Host.
14	COMMUNI-CATING	Communication failure. (See SEMI E4 or SEMI E37 for a protocol-specific definition of communication failure.)	NOT COMMUNI-CATING	Dequeue all messages queued to send.	Dequeued messages may be placed in spool buffer as appropriate.
15	WAIT CR FROM HOST	Received S1, F13.	COMMUNI-CATING	Send S1, F14 with COMMACK = 0.	Communications are established.

5-2. Control State

Control state

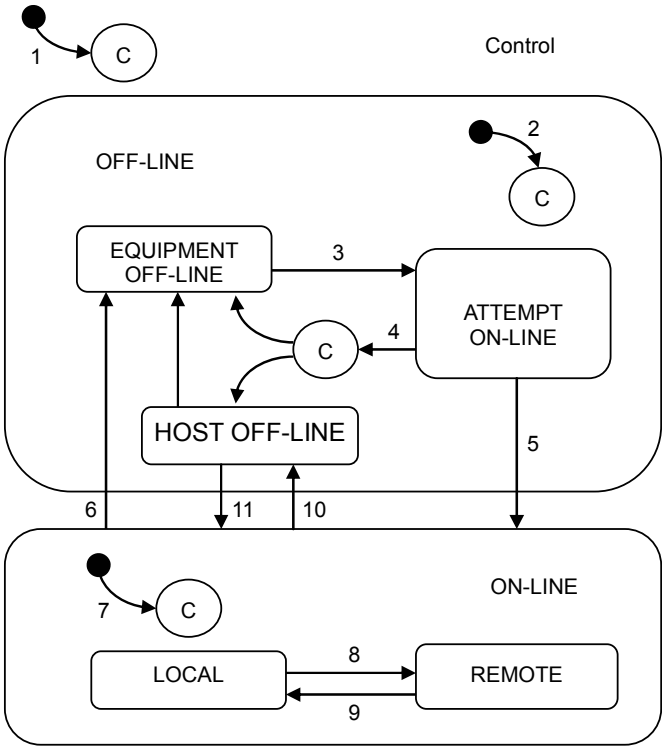
The equipment supports substates described in the figure described in the following page and state transition definitions.

Summary of this section

Section No.	Title
5-2-1	Control state figure
5-2-2	Descriptions of the control state
5-2-3	Control state transition table

5-2-1. Control state figure

Control state figure



5-2-2. Descriptions of the control state

OFF-LINE

The equipment does not receive any control at all from the host and provides quite limited range of information. This condition is the lowest level of the control state. When the OFF-LINE state is active, operation of the equipment is performed by the operator at the operator console. While OFF-LINE, the equipment will respond with an xF0/S9F0 to any primary message from the host except S1F13 (Establish Communication Request) and S1F17 (Request ON-LINE).

OFF-LINE/EQUIPMENT OFF-LINE

While this state is active, the system maintains the OFF-LINE state. It waits for operator instructions to attempt to ON-LINE.

OFF-LINE/ATTEMPT ON-LINE

While the ATTEMPT ON-LINE state is active, the equipment has responded to an operator instruction to attempt to go to the ON-LINE state. Upon activating this state, the equipment attempts to send S1F1 to the host.

Note) When this state is active, the system does not respond to operator actuation of either the ON-LINE or the OFF-LINE switch.

OFF-LINE/HOST OFF-LINE

While the HOST OFF-LINE state is active, the host does not agree the attempt of the operator to make the machine ON-LINE. This status is achieved, because the attempt to go to ON-LINE is failed, or the host requested to the equipment to go OFF-LINE from ON-LINE. While this state is active, the equipment shall positively respond to any host's request to go ON-LINE (S1, F17). Such a request shall be denied when the HOST OFF-LINE state is not active.

ON-LINE

While the ON-LINE state is active, SECS-II messages may be exchanged and the operation is performed based on that.

ON-LINE/LOCAL

The middle level, ON-LINE/LOCAL, allows the host full access to information, but has some limits depending on how the host can affect the equipment's operations.

ON-LINE/REMOTE

The highest level, ON-LINE/REMOTE, allows the host to control the equipment to the full extent via SECS-II communication interface. Any stream/function can be used.

5-2-3. Control state transition table

Control state transition table

No.	Current State	Trigger	New State	Action	Comment
1	(Undefined)	Entry into CONTROL state (system initialization)	CONTROL (Substate conditional on configuration)	None	Equipment may be configured to default to ON-LINE or OFF-LINE.
2	(Undefined)	Entry into OFF-LINE state	OFF-LINE (Substate conditional on configuration)	None	Equipment may be configured to default to any substate of OFF-LINE.
3	EQUIPMENT OFF-LINE	Operator actuates ON-LINE switch.	ATTEMPT ON-LINE	None	Note that an S1, F1 is sent whenever ATTEMPT ON-LINE is activated.
4	ATTEMPT ON-LINE	S1, F0	New state conditional on configuration	None	This may be due to a communication failure, reply timeout, or receipt of S1, F0. Configuration may be set to EQUIPMENT OFF-LINE or HOST OFF-LINE.
5	ATTEMPT ON-LINE	Equipment receives expected S1, F2 message from the host.	ON-LINE	None	Host is notified of transition to ON-LINE at transition 7.
6	ON-LINE	Operator actuates OFF-LINE switch.	EQUIPMENT OFF-LINE	None	"Equipment OFF-LINE" event occurs. Event reply will be discarded while OFF-LINE is active.
7	(Undefined)	Entry to ON-LINE state	ON-LINE (Substate conditional on REMOTE/LOCAL switch setting)	None	"Control State LOCAL" or "Control State REMOTE" event occurs. Event reported based on actual ON-LINE substate activated.
8	LOCAL	Operator sets front panel switch to REMOTE.	REMOTE	None	"Control State REMOTE" event occurs.
9	REMOTE	Operator sets front panel switch to LOCAL.	LOCAL	None	"Control State LOCAL" event occurs.
10	ON-LINE	Equipment accepts "Set OFF-LINE" message from host (S1, F15).	HOST OFF-LINE	None	"Equipment OFF-LINE" event occurs.
11	HOST OFF-LINE	Equipment accepts host request to go ON-LINE (S1, F17).	ON-LINE	None	Host is notified to transition to ON-LINE at transition 7.
12	HOST OFF-LINE	Operator actuates OFF-LINE switch.	EQUIPMENT OFF-LINE	None	"Equipment OFF-LINE" event occurs.

5-3. Equipment Processing States

Overview

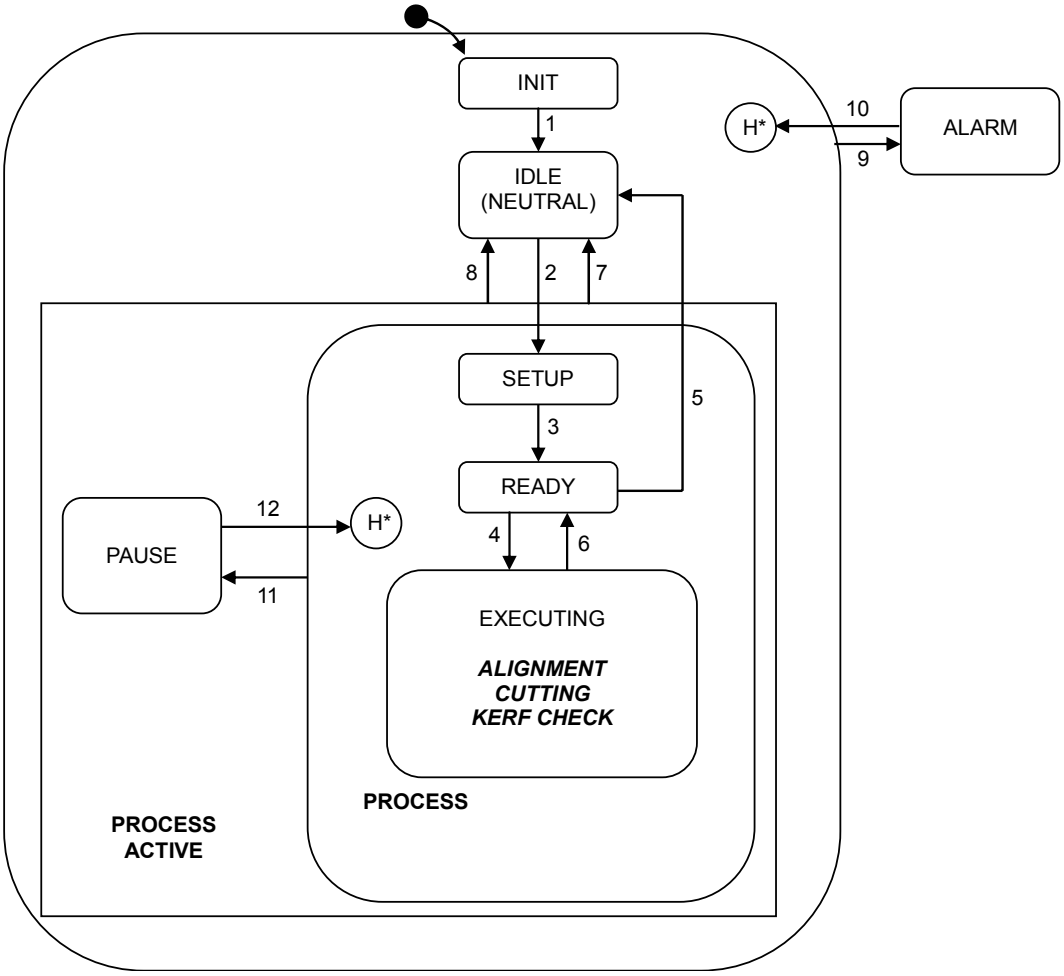
The equipment must generate collection events for each processing state transition, as well as provide status variables (Process State, Previous Process State) whose values are the current processing state and the previous processing state.

Summary of this section

Section No.	Title
5-3-1	Processing state diagram
5-3-2	Descriptions of the processing states
5-3-3	Processing state transition table
5-3-4	Processing substate diagram

5-3-1. Processing state diagram

Processing state diagram



5-3-2. Descriptions of the processing states

Processing states

No.	PROCESS STATE	DESCRIPTION
1	IDLE (NEUTRAL)	In this state, the equipment is awaiting instructions.
2	PROCESS ACTIVATE	This state is the parent of all substrates where the context of process program execution exists.
3	PROCESS	This state is the parent of those substates that refer to the active preparation and execution of a process program.
4	SETUP	During preparation for satisfying all external conditions necessary for process execution. For example, ensuring material is present at the equipment, input/output ports are in the proper state, parameters such as temperature and pressure values are within limits, etc. If all setup operations are completed, this becomes a fall through state and a transition to the next state takes place.
5	READY	In this state, the equipment is ready for process execution and is awaiting a START command from the operator or the host.
6	EXECUTING	The equipment is automatically executing process program, and is able to continue operation without external intervention.
7	PAUSE	Processing is suspended and the equipment is awaiting a command.
8	ALARM	Processing is suspended and the equipment is awaiting a command.

Also, the state variables to show the current process state (Process State) and the previous process state (Previous Process State) are provided.

Processing state variable types

No.	SVID	SV NAME	SEMI GEM FORMAT	RANGE	DESCRIPTION
1	1009	ProcessState	51	0=INIT 1=IDLE 2=SETUP 3=READY 4=EXECUTE 5=PAUSE 6=ALARM	
2	1008	PreviousProcessState	51	Same as above	

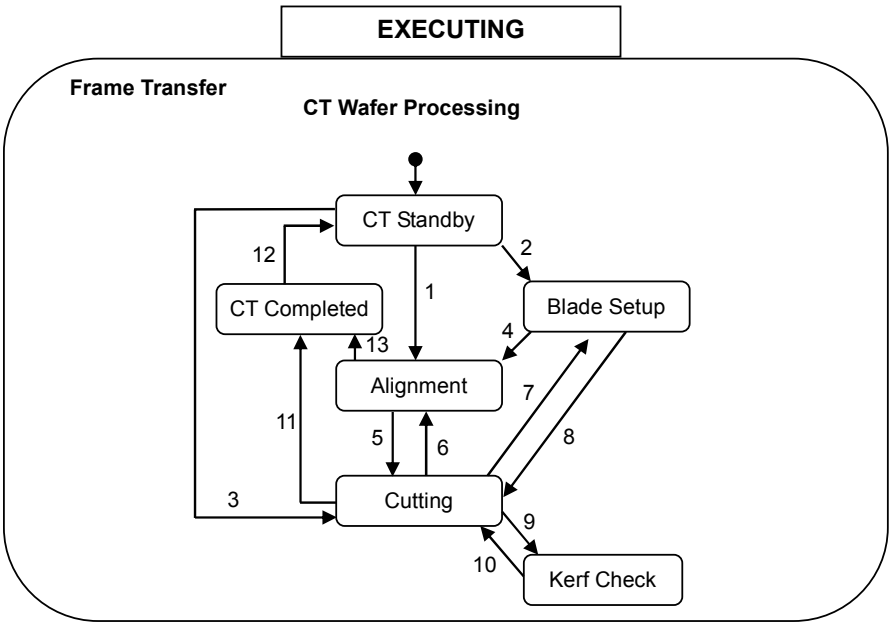
5-3-3. Processing state transition table

Processing state transition table

No.	Current State	Trigger	New State	Action	Comment
1	INIT	Equipment initialization completed	IDLE	None	None
2	IDLE (NEUTRAL)	Commit has been made to set up (full auto initialization). The F1 key was pressed on the Main Menu screen.	SETUP	None	None
3	SETUP	All setup activity has been completed and the equipment is ready to receive a START command.	READY	All axes initialization (e.g., alarm)	None
4	READY	Full auto processing start Equipment has received a START command from the host or operator console.	EXECUTING (FULLAUTO)	Alignment, and cut	None
5	READY	Full auto processing stop The EXIT or STOP key was pressed.	IDLE (NEUTRAL)	None	None
6	EXECUTING	The full auto task has been completed.	READY	None	None
7	PROCESSING ACTIVE	Full auto processing stop The EXIT or STOP key was pressed.	IDLE (NEUTRAL)	None	None
8	PROCESSING ACTIVE	The equipment initialization has been completed after the SYS INIT key (Abort) was pressed.	IDLE (NEUTRAL)	None	None
9	(no state)	The equipment transferred to the production pausing state due to alarm generation or the like.	ALARM	None	Alarm cancellation and retry. For this type of problem, an operator assist is usually required.
10	ALARM	The equipment receives the ALARM RECOVERY command from the host or operator console.	Previous PROCESS substate	None	See Host Remote Command**.**
11	PROCESS	The operator pressed the STOP key or the deicer received any command competing with the STOP key from the host.	PAUSE	None	None
12	PAUSE	Equipment has received a RESUME command from the host or operator console.	Previous PROCESS substate	None	None

5-3-4. Processing substate diagram

Processing substate diagram



Descriptions of the processing substates

No.	PROCESS STATE	DESCRIPTION
1-3	--	Reserved
4	CT Standby	CT is on standby to start.
5	Alignment	Alignment is being executed.
6	Blade Setup	Blade setup is being executed.
7	Cutting	During cutting process
8	Kerf Check	Kerf check is being executed.
9	CTCompleted	Processing on CT is completed.

Processing substate variable types

State variables for each sub-process state are provided as follows:

No.	SVID	SV NAME	SEMI GEM FORMAT	RANGE	DESCRIPTION
1	1101	CTStatus	52	<Stage state> 0 = Init 1 = Idle 2 = Alignment 3 = Cut 4 = Kerf check 5 = Set-up 7 = End 8 = Disable	

Processing substate transition table

No.	Current State	Trigger	New State	Action	Comment
1	CT Standby	When a workpiece is loaded to the C/T, and the device is not set to perform setup before processing a workpiece	Alignment	None	None
2	CT Standby	When a workpiece is loaded to the C/T, and the device is set to perform setup before processing a workpiece.	Blade Setup	None	None
3	CT Standby	When a workpiece is loaded to C/T, and the device is not set to perform setup before processing a workpiece, and this device is cut without alignment.	Cutting	None	None
4	Blade Setup	The equipment completed the blade setup.	Alignment	None	None
5	Alignment	The equipment completed the alignment.	Cutting	None	None
6	Cutting	The equipment completed the cut and starts the alignment.	Alignment	None	None
7	Cutting	If the device is set to perform blade setup during cutting.	Blade Setup	None	None
8	Blade Setup	The equipment completed the blade setup.	Cutting	None	None
9	Cutting	When kerf check is performed during cutting the device.	Kerf Checking	None	None
10	Kerf Checking	The equipment completed the kerf check.	Cutting	None	None
11	Cutting	The equipment completed all the C/T processes.	CT Completed	None	None
12	CT Completed	Transfer of the wafer to the S/T starts.	CT Standby	None	None
13	Alignment	The equipment completed all the C/T processes.	CT Completed	None	None

5-4. Port State

Port state

This section, which is described in the SEMI standard E87-0600, is unsupported because the machine does not operate by the carrier.

6. Equipment Performance and Scenarios

Introduction

This section describes the explanations and scenarios of each function. However, the explanations and scenarios that comply with the GEM provisions are omitted.

Summary of this section

Section No.	Title
6-1	Communication Establishment
6-2	Event Notification
6-3	Dynamic Event Report Configuration
6-4	Variable Data Collection
6-5	Trace Data Collection
6-6	Limits Monitoring
6-7	Status Data Collection
6-8	On-line Identification
6-9	Alarm Management
6-10	Remote Control
6-11	Equipment Constants
6-12	Process Program Management
6-13	Material Transfer
6-14	Equipment Terminal Service
6-15	Error Message
6-16	Clock
6-17	Spooling
6-18	Control

6-1. Communication Establishment

Outline

This function to establish communications complies with the GEM definition.

6-2. Event Notification

Outline

For active events (CEID), see Section 10, [Event List].

6-3. Dynamic Event Report Configuration

Outline

Dynamic event report configuration complies with the GEM definition.

6-4. Variable Data Collection

Outline

Variable data collection complies with the GEM definition.

6-5. Trace Data Collection

Outline

The number of trace IDs, which can be traced simultaneously, is up to 9 (1 to 10), and the number of the state variables that can be set is up to 9.

Limit of usable variables: Except for the List configuration variable

6-6. Limits Monitoring

Outline

The limit monitoring of the following state variable ID (SVID) can be performed.

Up to 10 state variables can be set, and seven (7) limit IDs can be used for one state variable.

List of state variable ID (whose limits monitoring is available)

SVVAL Data Definition							
SVID	SV Name	Format	Bytes	Unit	Default	Min.	Max.
1302	BLADE_EDGE	34	4	nm	N/A	N/A	N/A
1304	BLADE_WASTE	34	4	nm	N/A	N/A	N/A
1306	BLADE_LAST	34	4	nm	N/A	N/A	N/A
1380-1389	CH_Q[0-9]	34	4	%	N/A	0	100
1500	DCBL_REV	34	4	rpm	0	0	60000
1502	DCBL_CUR	34	4	*10-3(A)	0	0	9999999
1520	COUNT_WORK	34	4	Lines	N/A	N/A	N/A

6-7. Status Data Collection

Outline

For valid status variables, see Section 9-1, [Variables List].

6-8. On-line Identification

Outline

The on-line identification of the equipment complies with the GEM definition.

6-9. Alarm Management

Outline

For the alarm types that occur at this equipment, see Section 11, [Alarm List].

6-10. Remote Control

Summary of this section

Section No.	Title
6-10-1	Remote command
6-10-2	Parameters added to remote command
6-10-3	Limit of remote command

6-10-1. Remote command

Remote command

The following remote command is supported.

REMOTE/HOST COMMAND LIST

RCMD		
Remote Command	S2F41	Description
START	"START_S"	Full automation start for single dicer Acceptable only when an equipment is in full automation state (when Menu 10 on the full automation start/stop screen is displayed after changing dicer) ・Go to the full automation status screen ・Start full automation
PP-SELECT	"PP_SELECT_S"	Process program (s) change CPNAME1 = "DEV_NO" CPVAL1 = PPID Acceptable only when an equipment is in full automation state (when Menu 10 on the full automation start/stop screen is displayed after changing dicer) ・Set the requested process program (PPID) to DEV_NO (current dicer No.)
STOP	"STOP"	Full automation stop Acceptable only when the equipment is in full automation state. After receiving this command, if the equipment is cutting a wafer, the equipment will stop after completing cutting the wafer and the full automation mode is released. ・Stop full automation. ・Go to the main menu screen.
PAUSE	"PAUSE"	<START/STOP> button
RESUME	"RESUME"	<START/STOP> button
PAUSE	"PAUSE_H"	When this PAUSE command was issued, the equipment becomes waiting state for RESUME_H command from the host. Therefore, you cannot resume full automation process by pressing the <START/STOP> button.
RESUME	"RESUME_H"	Release the stop status of PAUSE_H.
ABORT	"ABORT"	System initialization ・<System Initial> button

RCMD		
Remote Command	S2F41	Description
Emergency stop	"EMERGENCY"	<Z-EM> button
System initialize	"I"	System initialization ・<System Initial> button
Fullauto initialize	"INIT_S"	Full auto initialization for single device Acceptable only when an equipment is in neutral status (when the menu 00 is displayed on the MAIN MENU screen after changing dicer), and device number has been specified. ・Go to the full auto start/stop screen. ・Initialize for full automation.
Alignment retry	"1"	Alignment retry Acceptable only when the equipment is in alignment error state. ・Cancel the alarm state. ・Alignment retry
Alignment reject	"2"	Alignment reject Acceptable only when the equipment is in alignment error status. ・Clear alarm state. ・No wafer is cut.
Kerf check retry	"3"	Kerf check retry Acceptable only when the equipment is in the kerf check error state. ・Alarm state clear ・Kerf check retry
Kerf check reject	"4"	Kerf check reject Acceptable only when the equipment is in the kerf check error state. ・Alarm state clear ・Cutting is continued.
Precut start	"7"	Precut start Acceptable only when the equipment is suspending cutting or it is in the full automation state. After receiving, the next water will be precut.
LOCAL request	"GO_LOCAL"	LOCAL state transition Acceptable only when the equipment is in local or remote state.
REMOTE request	"GO_REMOTE"	REMOTE state transition Acceptable only when the equipment is in local or remote state.
Error recovery	"RECOVERY"	Error recovery screen display ・Display of error recovery screen (Recali etc.)

6-10-2. Parameters added to remote command

“PP_SELECT_S”, “PP_START_S” command

CPNAME	CPVAL FORMAT	DESCRIPTION
Port	B(1)	Port number (Fixed to 1)
DEV_NO	A(80)	Recipe number

“START_S” command

When PPID is selected beforehand by "PP-SELECT_S," only port number is given as a parameter.

CPNAME	CPVAL FORMAT	DESCRIPTION
Port	B (1)	Port number (Fixed to 1)

・DEV_NO parameter set
Recipe name which includes a pass name can be set in DEV_NO parameters.
Recipe data are usually stored in the DEV folder. But, it is possible to create a folder for storing recipe data under DEV folder according to user specification.
If there is no specification of pass name in a DEV_NO parameter, the recipe under default DEV folder will be a target. If the pass name is specified as shown in the following sample, the recipe data under the pass name folder is referred to (see the sample below).

Sample: DEV_NO = Rate¥AAA: User folder (Rate) is specified. ("¥" is shown by a back slash)

6-10-3. Limit of remote command

Limit of remote command

Command	Allowed in Port States	Allowed in Process States	In Local By Oper.	In Local By Host	In Remote By Oper.	In Remote By Host
START_S PP_START_S	TRANSFER BLOCKED	READY	Yes	No	No	Yes
PP_SELECT_S	READY TO LOAD or TRANSFER BLOCKED	IDLE or SETUP or READY	Yes	Yes	Yes	Yes
STOP	IN SERVICE	EXECUTING or PAUSE	Yes	No	Yes	Yes
PAUSE	IN SERVICE	EXECUTING	Yes	No	Yes	Yes
RESUME	IN SERVICE	PAUSE	Yes	No	Yes	Yes
PAUSE_H	IN SERVICE	EXECUTING	No	No	No	Yes
RESUME_H	IN SERVICE	PAUSE	No	No	No	Yes
ABORT	IN SERVICE	EXECUTING or PAUSE	Yes	No	Yes	Yes
EMERGENCY	ANY	ANY	Yes	No	Yes	Yes
I(System Initialize)	READY TO LOAD or READY TO UNLOAD	IDLE or SETUP or READY	Yes	No	Yes	Yes
INIT_S	TRANSFER BLOCKED	READY	Yes	No	No	Yes
CLEAR	IN SERVICE	EXECUTING or PAUSE	Yes	No	Yes	Yes
1 (Alignment Retry)	IN SERVICE	ALARM	Yes	No	Yes	Yes
2 (Alignment Reject)	IN SERVICE	ALARM	Yes	No	Yes	Yes
3 (Kerf Check Retry)	IN SERVICE	ALARM	Yes	No	Yes	Yes
4 (Kerf Check Reject)	IN SERVICE	ALARM	Yes	No	Yes	Yes
7 (Precut Start)	IN SERVICE	EXECUTING or PAUSE	Yes	No	Yes	Yes
GO_LOCAL	ANY	ANY	No	No	Yes	Yes
GO_REMOTE	ANY	ANY	Yes	Yes	No	No
RECOVERY	IN SERVICE	EXECUTING	Yes	No	Yes	Yes

6-11. Equipment Constants

Outline

For valid equipment constants, see Section 9-2, [List of Constants].

6-12. Process Program Management

Outline

This equipment supports process programs both with/without format.

Recipe data are usually stored in the DEV folder. However, according to user specification, it is available to create a folder for storing recipe data under the DEV folder.

If there is no specification of pass name in a DEV_NO parameter, the recipe data under default DEV folder will be a target. If the specific pass name is specified, the recipe data in the specific pass name folder is referred to.

Sample: DEV_NO=Rate¥AAA: User folder (Rate) is specified. ("¥" is shown by a back slash)

Summary of this section

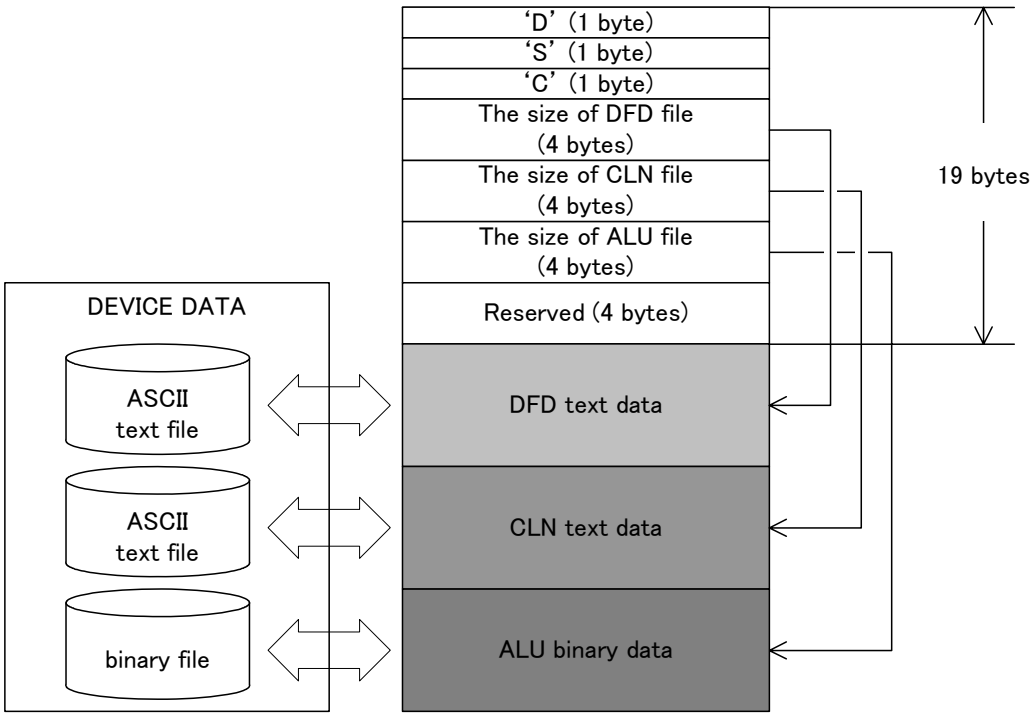
Section No.	Title
6-12-1	Process program without specific format

6-12-1. Process program without specific format

PPBODY

Process program without specific format (PPBODY) has the following process parameter values for each process step in variable text file format.

When PPBODY is modified for validation check, the host must be responsible for the change.



[PPBODY MESSAGE FORMAT]

6-13. Material Transfer

Outline

For details, see Section 5-4, [Port State], since material transfer is processed based on the Carrier Management Standard (CMS).

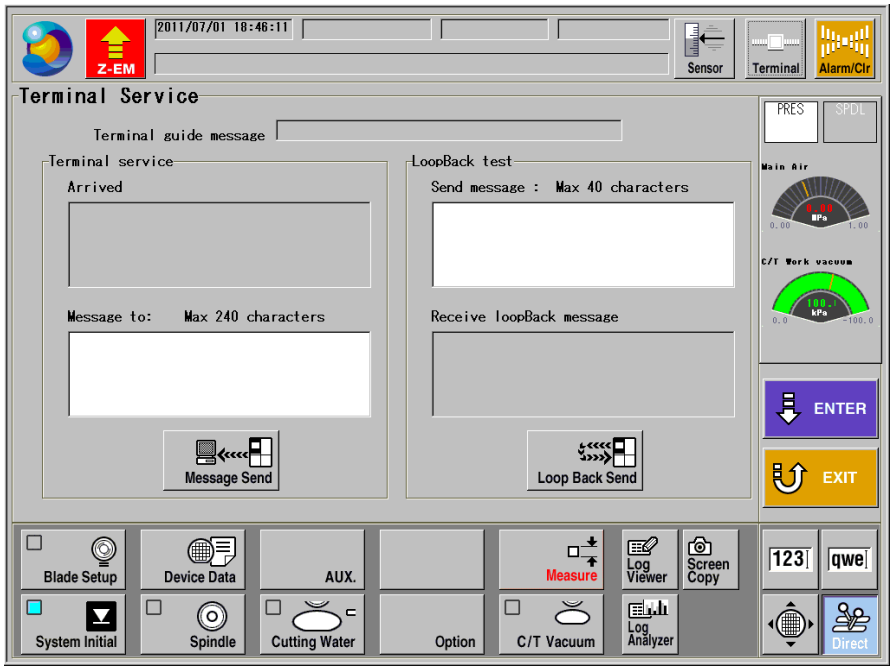
6-14. Equipment Terminal Service

Outline

Up to 240 characters (240 bytes) can be displayed as terminal display limitation.

TERMINAL SERVICE screen

The TERMINAL SERVICE screen is displayed when the <Terminal> button on the right upper area of the screen is pressed. When the machine receives a message from the host, the <Terminal> button turns blue.



The display/input items on the TERMINAL SERVICE screen are described below.

[Terminal service] frame

Item	Description
Arrived	Received messages from the host are displayed.
Message to	Set the message contents you want to send to the host.
Message Send	Pressing this button sends the message.

6-15. Error Message

Outline

The error message function complies with the GEM definition.

6-16. Clock

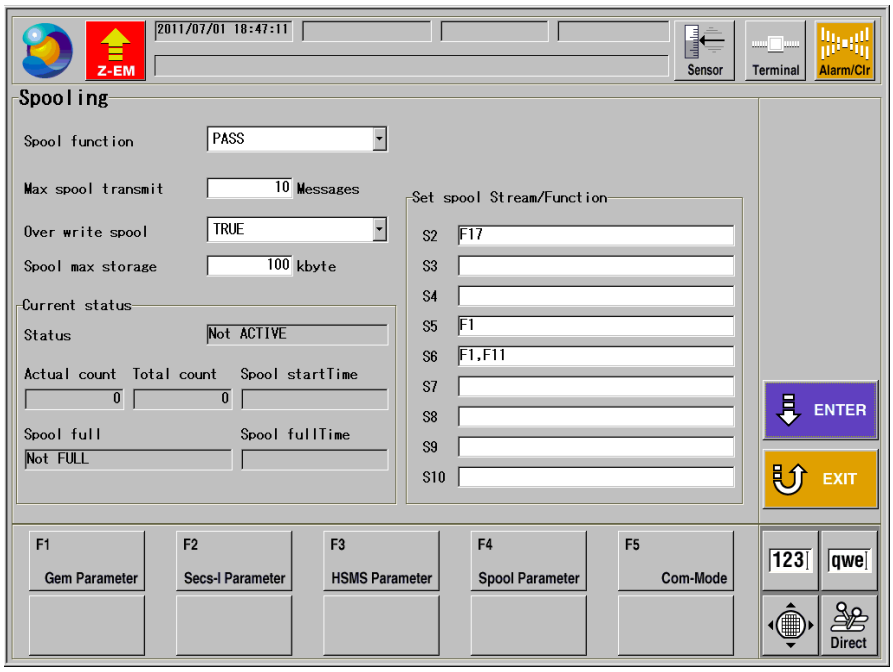
Outline

The clock function complies with the GEM definition.

6-17. Spooling

SPOOLING screen

This section describes the display/input items on the SPOOLING screen.



[Spool function] item

Item	Description
Spool function	Selects whether the spooling function will be used or not. PASS: Spooling function will not be used. USE: Spooling function will be used.

[Max spool transmit] item

Item	Description
Max spool transmit	Specify the maximum number of the messages to be sent to the host at a time (range: 1 to 999). "0" means that all the message will be sent to the host.

[Over write spool] item

Item	Description
Over write spool	Select whether the Spool will be overwritten or not. TRUE: Enables overwriting. FALSE: Disables overwriting.

[Spool max storage] item

Item	Description
Spool max storage	Set the size of the spool buffer inside the machine (range: 100~99999KB). The default setting is 100KB.

[Current status] frame

Displays the current status of the spool function.

Item	Description
Status	Displays the current spool status.
Actual count	Displays the actual count of the spool.
Total count	Displays the total count of the spool.
Spool startTime	Displays the spool start time.
Spool full	Displays whether the current spool is full or not.
Spool fullTime	Displays the time that the spool reached the full status.

[Set spool Stream/Function] frame

Set the possible spool message type.

Item	Description
S2–S10	Enter the function list for each stream from S2 to S10 using a comma to separate each function.

6-18. Control

Control

The control functions comply with the GEM provisions.

7. SECS-II Message Subset

Introduction

The equipment uses the messages described at Section 7-1. (All the messages defined in GEM are provided.)

Summary of this section

Section No.	Title
7-1	SECS-II Message Subset
7-2	SECS-II Data List

7-1. SECS-II Message Subset

Message list

Stream	Function	Message Name	Description
S1	F0	Abort Transaction	S H<-->E
S1	F1	Are You There Request (R)	S H<-->E, Reply
S1	F2	On-line Data (D)	S H<-->E
S1	F3	Selected Equipment Status Request (SSR)	S H-->E, Reply
S1	F4	Selected Equipment Status Data (SSD)	M H<--E
S1	F11	Status Variable Namelist Request (SVNR)	S H-->E, Reply
S1	F12	Status Variable Namelist Reply (SVNRR)	M H<--E
S1	F13	Establish Communication Request (CR)	S H<-->E, Reply
S1	F14	Establish Communication Request Acknowledge (CRA)	S H<-->E
S1	F15	Request OFF-LINE (ROFL)	S H-->E, Reply
S1	F16	OFF-LINE Acknowledge (OFLA)	S H<--E
S1	F17	Request ON-LINE (RONL)	S H-->E, Reply
S1	F18	ON-LINE Acknowledge (ONLA)	S H<--E
S2	F0	Abort Transaction	S H<-->E
S2	F13	Equipment Constant Request (ECR)	S H-->E, Reply
S2	F14	Equipment Constant Data (ECD)	M H<--E
S2	F15	New Equipment Constant Send (ECS)	S H-->E, Reply
S2	F16	New Equipment Constant Acknowledge (ECA)	S H<--E
S2	F17	Date and Time Request (DTR)	S H<-->E, Reply
S2	F18	Date and Time Data (DTD)	S H<-->E
S2	F23	Trace Initialize Send (TIS)	S H-->E
S2	F24	Trace Initialize Acknowledge (TIA)	S H<--E
S2	F25	Loopback Diagnostic Request (LDR)	S H<-->E, Reply
S2	F26	Loopback Diagnostic Data (LDD)	S H<-->E
S2	F29	Equipment Constant Namelist Request (ECNR)	S H-->E, Reply
S2	F30	Equipment Constant Namelist (ECN)	M H<--E
S2	F31	Date and Time Send (DTS)	S H-->E, Reply
S2	F32	Date and Time Acknowledge (DTA)	S H<--E
S2	F33	Define Report (DR)	M H-->E, Reply
S2	F34	Define-Report Acknowledge (DRA)	S H<--E
S2	F35	Link Event Report (LER)	M H-->E, Reply
S2	F36	Link Event Report Acknowledge (LERA)	S H<--E
S2	F37	Enable/Disable Event Report (EDER)	S H-->E, Reply
S2	F38	Enable/Disable Event Report Acknowledge (EDEA)	S H<--E
S2	F39	Multi-Block Inquire (DMBI)	S H-->E, Reply
S2	F40	Multi-Block Grant (DMBG)	S H<--E
S2	F41	Host Command Send (HCS)	M H-->E, Reply
S2	F42	Host Command Acknowledge (HCA)	S H<--E
S2	F43	Reset Spooling Streams and Functions (RSSF)	S H-->E, Reply
S2	F44	Reset Spooling Acknowledge (RSA)	M H<--E

Message list (Continued)

Stream	Function	Message Name	Description
S2	F45	Define Variable Limit Attributes (DVLA)	M H-->E, Reply
S2	F46	Variable Limit Attribute Acknowledge (VLAA)	M H<--E
S2	F47	Variable Limit Attribute Request (VLAR)	S H-->E, Reply
S2	F48	Variable Limit Attribute Send (VLAS)	M H<--E
S5	F0	Abort Transaction	S H<-->E
S5	F1	Alarm Report Send (ARS)	S H<--E, Reply
S5	F2	Alarm Report Acknowledge (ARA)	S H-->E
S5	F3	Enable/Disable Alarm Send (EAS)	S H-->E, Reply
S5	F4	Enable/Disable Alarm Acknowledge (EAA)	S H<--E
S5	F5	List Alarms Request (LAR)	S H-->E, Reply
S5	F6	List Alarm Data (LAD)	M H<--E
S6	F0	Abort Transaction	S H<-->E
S6	F1	Trace Data Send (TDS)	S H<--E, Reply
S6	F2	Trace Data Acknowledge (TDA)	S H-->E
S6	F5	Multi-block Data Send Inquire (MBI)	S H<--E, Reply
S6	F6	Multi-block Grant (MBG)	S H-->E
S6	F11	Event Report Send (ERS)	M H<--E, Reply
S6	F12	Event Report Acknowledge (ERA)	S H-->E
S6	F15	Event Report Request (ERR)	S H-->E, Reply
S6	F16	Event Report Data (ERD)	M H<--E
S6	F19	Individual Report Request (IRR)	S H-->E, Reply
S6	F20	Individual Report Data (IRD)	M H<--E
S6	F23	Request Spooled Data (RSD)	S H-->E, Reply
S6	F24	Request Spooled Data Acknowledgement Send (RSDAS)	S H<--E
S7	F0	Abort Transaction	S H<-->E
S7	F1	Process Program Load Inquire (PPI)	S H<-->E, Reply
S7	F2	Process Program Load Grant (PPG)	S H<-->E
S7	F3	Process Program Send (PPS)	M H<-->E, Reply
S7	F4	Process Program Acknowledge (PPA)	S H<-->E
S7	F5	Process Program Request (PPR)	S H<-->E, Reply
S7	F6	Process Program Data (PPD)	M H<-->E
S7	F17	Delete Process Program Send (DPS)	S H-->E, Reply
S7	F18	Delete Process Program Acknowledge (DPA)	S H<--E
S7	F19	Current EPPD Request (RER)	S H-->E, Reply
S7	F20	Current EPPD Data (RED)	M H<--E
S9	F1	Unrecognized Device ID (UDN)	S H<--E
S9	F3	Unrecognized Stream Type (USN)	S H<--E
S9	F5	Unrecognized Function Type (UFN)	S H<--E
S9	F7	Illegal Data (IDN)	S H<--E
S9	F9	Transaction Timer Timeout (TTN)	S H<--E
S9	F11	Data Too Long (DLN)	S H<--E
S9	F13	Conversation Timeout (CTN)	S H<--E

Message list (Continued)

Stream	Function	Message Name	Description
S10	F0	Abort Transaction	S H<-->E
S10	F1	Terminal Request (TRN)	S H<--E, Reply
S10	F2	Terminal Request Acknowledge (TRA)	S H-->E
S10	F3	Terminal Display, Single (VTN)	S H-->E, Reply
S10	F4	Terminal Display, Single Acknowledge (VTA)	S H<--E
S10	F5	Terminal Display, Multi-block (VMN)	M H-->E, Reply
S10	F6	Terminal Display, Multi-block Acknowledge (VMA)	S H<--E

7-2. SECS-II Data List

SECS-II data list of this equipment

Data Item	Description	Format	Length
ABS	Any binary string	Binary	m
ACKC5	Acknowledge code	Binary	1
ACKC6	Acknowledge code	Binary	1
ACKC7	Acknowledge code	Binary	1
ACKC7A	Acknowledge code	U-Integer	1
ALCD	Alarm code with set/clear	Binary	1
ALED	Alarm enable/disable	Binary	1
ALID	Alarm ID	U-Integer	4
ALTX	Alarm text message	Ascii	40
ATTRDATA	Contains special attribute value for specific object.	All	m
ATTRID	Attribute identifier for specific type of object	Ascii	m
ATTRRELN	Defines relation between specific values and the value of object instance attribute.	U-Integer	1
CAACK	Carrier Action Acknowledge Code	U-Integer	1
CARRIERACTION	Specifies the requested for a carrier.	Ascii	m
CARRIERSPEC	The object specifier for a carrier. Confirm OBJSPEC.	Ascii	m
CATTRDATA	The value of a carrier attribute	All	m
CATTRID	The name of a carrier attribute	Ascii	m
CCODE	Command code	U-Integer	2
CEED	Collection event enable/disable code	Boolean	1
CEID	Collected event ID	Unteger	4
COMMACK	Communication establish acknowledge code	Binary	1
CPNAME	Command parameter name	Ascii	m
CPACK	Command acknowledge	Integer	1
CPVAL	Command parameter value	All	m
DATAID	Data ID	U-Integer	2
DATALENGTH	Data length	U-Integer	2
DRACK	Define report acknowledge code	Binary	1
DSPER	Data gathering time (hhmmss/hhmmsscc)	Ascii	m
EAC	Equipment acknowledge code	Binary	1
ECID	Equipment constant ID	U-Integer	2
ECV	Equipment constant value	All	m
ECDEFS	Equipment constant default value	All	m
ECMAX	Equipment constant maximum value	All	m
ECMIN	Equipment constant minimum value	All	m
ECNAME	Equipment constant name	Ascii	m
EDID	IDExpected data ID	All	m
ERACK	Enable/Disable event report	Binary	1
ERRCODE	Error code	U-Integer	2
ERRTEXT	Error text showing the contents of ERRCODE	Ascii	m

Data Item	Description	Format	Length
ERRW7	Text string describing error found in process program	Ascii	m
FCNID	Function ID	U-Integer	1
GRANT	Grant code	Binary	1
GRANT6	Permission to send	Binary	1
HCACK	Host command parameter acknowledge code	Binary	1
LENGTH	Length of the service program or process program	U-Integer	2,4
LIMITACK	Acknowledgement code for variable limit attribute set	U-Integer	1
LIMITID	Limit ID	Binary	1
LIMITMAX	Limit maximum tolerance	All	m
LIMITMIN	Limit minimum tolerance	All	m
LINKID	Used to link a completion message with a request for an operator.	U-Integer	4
LOWERDB	A variable limit attribute which defines the lower boundary of the dead band of a limit	All	m
LRACK	Link report acknowledge code	Binary	1
LVACK	Variable limit definition acknowledge code	Binary	1
MDLN	.Equipment model type	Ascii	6
MEXP	Message expected in the form SxxFyy	Ascii	6
MHEAD	SECS message block header associated with message block in error	Binary	10
OBJID	Identifier for an object	Ascii	m
OBJSPEC	Text string that has an internal format and that is used to point to a specific object instance	Ascii	m
OBJTYPE	Identifier for a group or class of object.	Ascii	m
OFLACK	Acknowledge code for Off-line request	Binary	1
ONLACK	Acknowledge code for On-line request	Binary	1
PARAMNAME	Name of a parameter in a request	Ascii	m
PARAMVAL	Parameter named in PARAMNAME.	All	m
PPARM	Process parameter	All	m
PPBODY	Process program body	Binary	m
PPGNT	Process program grant status	Binary	1
PPID	Process program ID	Ascii	Max80
RCMD	Remote command	Ascii	m
REPGSZ	Reporting group size	U-Integer	2
RPTID	Report ID	U-Integer	2
RSDA	Request spooled data acknowledge	Binary	1
RSDC	Request spooled data acknowledge code	Unteger	1
RSPACK	Reset spooling acknowledge	Binary	1
SEQNUM	Command number	U-Integer	2
SMPLN	Sample number	U-Integer	2
SOFTREV	Software revision code	Ascii	6
STIME	Sample time (YYYYMMDDhhmmsscc or YYMMDDhhmmss)	Ascii	16 or 20
STRACK	Spool stream acknowledge	Binary	1

SECS-II data list of this equipment (Continued)

Data Item	Description	Format	Length
STRID	Stream ID	U-Integer	1
SV	Status variable value	All	m
SVNAME	Status variable name	Ascii	m
SVID	Status variable ID	U-Integer	2
TEXT	A single line of characters	Ascii	m
TIACK	Time acknowledgement code	Binary	1
TID	Terminal ID	Binary	1
TIME	YYYYMMDDhhmmsscc or YYMMDDhhmmss	Ascii	16 or 20
TOTSMP	Number of total samples	U-Integer	2
TRID	Trace request ID	U-Integer	2
UNITS	Units Identifier	Ascii	m
UPPERDB	Deadband upper limit	All	m
V	Variable data	All	m
VID	Variable ID	U-Integer	2

8. Message Details

Introduction

The message details are described in SML (SECS Message Language) format.

Summary of this section

Section No.	Title
8-1	Message Details

8-1. Message Details

S1, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of an expected reply to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S1F0
Header Only

S1, F1 - Are You There Request (R)

S, H<->E, Reply

Description: Confirms whether the equipment is on-line. When there is a replay of function 0, communication cannot be started. After the equipment sent S1F1 to the host, if function 0 is received, this function has the same meaning as replay timeout occurrence.

Structure: Header only

Message format
S1F1 W
Header Only

S1, F2 - On-Line Data (D)

S, H<->E

Description: Data signifying the equipment is on-line

Structure: L,2
1. <MDLN> A(6)
2. <SOFTREV> A(6)

MDLN and SOFTREV are character string variables as follows:

MDLN:	A(6)	・6 bytes (Max) of character string
SOFTREV:	A(6)	・6 bytes (Max) of character string

Exception: The host sends a zero-length list to the equipment.

Message format
S1F2
<L[2]
<A[6] MDLN>
<A[6] SOFTREV>
>

Sending from host
<L[0]
>

S1, F3 - Selected Equipment Status Report

S, H-->E, Reply

Description: This is a request to the equipment to report selected values of its status.

Structure: L,n
1. <SVID1> U(2)
:
n. <SVIDn> U(2)

Exception: A zero-length list (structure 1) means to report all SVIDs.

Message format
S1F3 W
<L
<U2 SVID>
.....
>

If Element = 0, (Specify all SVIDs)
<L[0]
>

S1, F4 - Selected Equipment Status Data

M, H<--E

Description: The equipment reports the value of each SVID in the requested order.
The host should remember which SVID is requested.

Structure: L,n
1. <SV1> ALL
:
n. <SVn> ALL

SVID values

Message format
S1F4
<L
<SV>
.....
>

S1, F11 - Status Variable Name list Request

S, H-->E, Reply

Description: A request to the equipment to identify certain status variables.

Structure: L,n
1. <SVID1> U(2)
:
n. <SVIDn> U(2)

Exception: A zero-length list (structure 1) means to report all SVIDs

Message format
S1F11 W
<L
<U2 SVID>
.....
>

If Element = 0, (Specify all SVIDs)
<L[0]
>

S1, F12 - Status Variable Name list Reply

M, H<--E

Description: The equipment reports to the host the name and units of the requested status variables.

Structure: L,n

1. L,3
    1. <SVID1> U(2)
    2. <SVNAME1> A(??)
    3. <UNITS1> A(??)
2. L,3
    1. <SVID2> U(2)
    2. <SVNAME2> A(??)
    3. <UNITS2> A(??)

:

:

n. L,3
    1. <SVIDn> U(2)
    2. <SVNAMEn> A(??)
    3. <UNITSn> A(??)

Message format

S1F12

```
<L
    <L[3]
        <U2 SVID>
        <A  SVNAME>
        <A  UNITS>
    >
    ...
>
```

S1, F13 - Establish Communications Request

S, H<-->E, Reply

Description: This message provides a means of initializing communications at startup or after a communications break.

Structure: L,2
1. <MDLN> A(6)
2. <SOFTREV> A(6)

Exception: Host sends a zero-length list.

Message format
S1F13 W
<L[2]
<A[6] MDLN>
<A[6] SOFTREV>
>

Sending from host
<L[0]
>

S1, F14 - Establish Communications Request Acknowledge

S, H<-->E

Description: Accept or deny Establish Communications Request (S1F13). MDLN and SOFTREV are on-line data and are valid only if COMMACK = 0.

Structure: L,2
1. <COMMACK> B(1)
2. L,2
1. <MDLN> A(6)
2. <SOFTREV> A(6)

COMMACK: Establish Communications Ack code
0 = Accepted
1 = Denied, Try again
2-63 Reserved

Exception: The host sends a zero-length list for item 2

Message format
S1F14
<L[2]
<B[1] COMMACK>
<L[2]
<A[6] MDLN>
<A[6] SOFTREV>
>
>

Sending from host
S1F14
<L[2]
<B[1] COMMACK>
<L[0]
>
>

S1, F15 - Request OFF-LINE

S, H-->E, Reply

Description: The host requests the equipment for transition to the OFF-LINE state.

Structure: Header only

Message format
S1F15 W
Header Only

S1, F16 - OFF-LINE Acknowledge

S, H<--E

Description: Replay of OK or NG to S1, F15

Structure: <OFLACK>

OFLACK: Acknowledge code for off-line request - B(1)
0 = Off-line accepted
1 - 63 Reserved

Message format
S1F16
<B[1] OFLACK>

S1, F17 - On-line Request

S, H-->E, Reply

Description: The host requests the equipment for transition to the ON-LINE state.

Structure: Header only

Message format
S1F17 W
Header Only

S1, F18 - ON-LINE Request Acknowledge

S, H<--E

Description: Replay of OK or NG to S1, F17

Structur: <ONLACK>

ONLACK: Acknowledge code for on-line request - B(1)

0 =	On-line accepted
1 =	Denied
2 =	Equipment is On-line already
3 - 63	Reserved

Message format
S1F18
<B[1] ONLACK>

S2, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of a valid secondary message to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S2F0
Header Only

S2, F13 - Equipment Constant Request

S, H-->E, Reply

Description: Constants such as for calibration that are changed frequently can be obtained using this message.

Structure: L,n
1. <ECID1> U(2)
:
n. <ECIDn>

ECID: Equipment Constant ID

Exception: The zero-length list or item means to report all ECVs according to a predefined order.

Message format
S2F13 W
<L
<U2 ECID>
.....
>

If Element = 0, (Specify all ECIDs.)
<L[0]
>

S2, F14 - Equipment Constant Data

M, H<--E

Description: Data response to S2, F13 in the requested order.

Structure: L,n
1. <ECV1> ALL
:
n. <ECVn> ALL

ECV: Equipment Constant Value

Message format
S2F14
<L
<ECV>
.....
>

S2, F15 - New Equipment Constant Send

S, H-->E, Reply

Description: Change equipment constants.

Structure: L,n
1. L,2
   1. <ECID1> U(2)
   2. <ECV1> ALL
2. L,2
:
n. L,2
   1. <ECIDn> U(2)
   2. <ECVn> ALL

Message format
S2F15 W
<L
  <L[2]
    <U2 ECID>
    <ECV>
  >
  ...
>

S2, F16 - New Equipment Constant Acknowledge

S, H<--E

Description: Acknowledge or error. If EAC contains a non-zero error code, the equipment should not change any of the ECIDs specified in S2F15.

Structure: <EAC>

EAC: Equipment acknowledge code - B(1)

0 =	Accepted
1 =	Denied. No constant exists.
2 =	Denied. Busy (Equipment process state is IN PROCESS or SETUP.)
3 =	Denied. There are constants of out of range.
>3 =	Other equipment-specific error
4 - 63	Reserved

Message format
S2F16
<B[1] EAC>

S2, F17 - Date and Time Request

S, H<->E, Reply

Description: Useful to check equipment time base or for equipment to synchronize with the host time base

Structure: Header Only

Message format
S2F17 W
Header Only

S2, F18 - Date and Time Data

S, H<->E

Description: Actual time data

Structure: <TIME> A(16) or A(12)

Time: When Time Format = 0, YYMMDDhhmmss
= 1, YYYYMMDDhhmmsscc

Message format
S2F18
<A[16 or 12] TIME>

S2, F23 - Trace Initialize Send

S, H-->E, Reply

Description: Status variables exist at all times. This function provides a way to sample a subset of hose status variables as a function of time. The trace data is returned on S6, F1 and is replaced to the origin request by the TRID Multiple trace requests may be made to that equipment allowing it. If equipment receives S2, F23 with the same TRID as a trace function that is currently in progress, the equipment should terminate the old trace and then initiate the new trace. A trace function currently in progress may be terminated by S2, F23 with TRID of that trace and TOTSMP = 0

Structure: The following structures are approved for item formats. They should be used by all new implementations.

L,5
1. <TRID>
2. <DSPER>
3. <TOTSMP>
4. <REPGSZ>
5. L,n
   1.<SVID1>
   :
   n.<SVIDn>

Message format

S2F23 W
<L[5]
    <U2 TRID>
    <A[6] DSPER>
    <U2 TOTSMP>
    <U2 REPGSZ>
    <L
        <U2 SVID>
    …
    >
>

S2, F24 - Trace Initialize Acknowledge

S, H<--E

Description: Replay of OK or NG to S2F23

Structure: <TIAACK>

TIAACK: Acknowledge code for trace initialize set - B(1)
- 0 = Accepted
- 1 = Denied. Too much state variable IDs (SVID).
- 2 = Denied. No more trace available.
- 3 = Denied. Invalid trace intervals.
- 4 = Denied. Invalid SVID.
- 5 - 63 = Reserved

Message format
S2F24
<B[1] TIAACK>

S2, F25 - Loopback Diagnostic Request

S, H<-->E, Reply

Description: Diagnostic message for checkout of protocol and communication circuits. The binary string is echoed back.

Structure: <ABS> B(?)

Message format
S2F25 W
<ABS>

S2, F26 - Loopback Diagnostic Data

S, H<-->E

Description: The echoed back binary string received in S2F25

Structure: <ABS> B(?)

Message format
S2F26
<ABS>

S2, F29 - Equipment Constant Name List Request

S, H-->E, Reply

Description: This function allows the host to retrieve basic information about equipment constants that are available in the equipment.

Structure: L,n
1. <ECID1> U(2)
:
n. <ECIDn> U(2)

Exception: A zero-length list (structure 1) means send information for all ECIDs.

Message format
S2F29 W
<L
<U2 ECID>
.....
>

If Element = 0, (Specify all ECIDs.)
<L[0]
>

S2, F30 - Equipment Constant Name List

M, H<--E

Description: The equipment reports the requested information, such as equipment constant name list, unit, etc.

Structure: L,n

1. L,6
    1. <ECID1> U(2)
    2. <ECNAME1> A(??)
    3. <ECMIN1> ALL
    4. <ECMAX1> ALL
    5. <ECDEF1> ALL
    6. <UNITS1> A(??)
2. L,6
    1. <ECID2> U(2)
    2. <ECNAME2> A(??)
    3. <ECMIN2> ALL
    4. <ECMAX2> ALL
    5. <ECDEF2> ALL
    6. <UNITS2> A(??)

:

:

n. L,6
    1. <ECIDn> U(2)
    2. <ECNAMEn> A(??)
    3. <ECMINn> ALL
    4. <ECMAXn> ALL
    5. <ECDEFn> ALL
    6. <UNITSn> A(??)

Message format

S2F30

```
<L
    <L[6]
    <U2 ECID>
        <A   ECNAME>
        <ECMIN>
        <ECMAX>
        <ECDEF>
        <A   UNITS>
    >
    ...
>
```

S2, F31 - Date and Time Set Request

S, H-->E, Reply

Description: Useful to synchronize the equipment time with the host time base.

Structure: <TIME> A(16) or A(12)

Time Format: Format when Time Format = 0, YYMMDDhhmmss
= 1, YYYYMMDDhhmmsscc

Message format
S2F31 W
<A[16 or 12] TIME>

S2, F32 - Date and Time Set Acknowledge

S, H<--E

Description: Acknowledge receipt of the time and date.

Structure: <TIACK>
TIACK: Time Acknowledge code - B(1)
0 = OK
1 = Error (not received)
2 - 63 = Reserved

Message format
S2F32
<B[1] TIACK>

S2, F33 - Define Report

M, H-->E, Reply

Description: Define a group of reports for the equipment.

Structure: L,2
1. <DATAID> U(2)
2. L,a
    1. L,2
        1. <RPTID1> U(2)
        2. L,b
            1. <VID1> U(2)
            :
            b. <VIDb>
    :
    a.L,2
        1. <RPTIDa>
        2. L,c
            1. <VID1>
            :
            c. <VIDc>

Exception: 1. A zero-length list following the DATA ID deletes all report definitions and associated links.
2. A zero-length list following a RPTID deletes report, and all CEID links to that report.

Message format

```
S2F33 W
<L[2]
    <U2 DATAID>
    <L
        <L[2]
            <U2 RPTID>
            <L
            <U2 VID>
            ...
            >
        >
    ...
    >
>
```

S2, F34 - Define Report Acknowledge

S, H<--E

Description: Acknowledge or error. If an error condition is detected, the entire message is rejected.

Structure: <DRACK> B(1)

DRACK: Define Report Ack code.

0 =	Accepted
1 =	Denied. Insufficient space
2 =	Denied. Invalid format
3 =	Denied. At least one RPTID already defined
4 =	Denied. There is no VID exist
>4 =	Other errors
5 - 63 =	Reserved

Message format
S2F34
<B[1] DRACK>

S2,F35 - Link Event Report

M, H-->E, Reply

Description: The purpose of this message for the host is to link plural reports to an event (CEID). Default of these linked event reports became disabled. That is, the occurrence of an event would not cause the report to be sent until enabled.

Structure: L,2
1. <DATAID> U(2)
2. L,a
   1. L,2
      1. <CEID1> U(4)
      2.L,b
         1. <RPTID1> U(2)
         :
         b. <RPTIDb>
   :
   a. L,2
      1. <CEIDa>
      2. L,c
         1. <RPTID1>
         :
         c. <RPTIDc>

Exception: All report links to that event following <CEID> will be deleted in a list of zero length

Message format

```
S2F35 W
<L[2]
        <U2 DATAID>
        <L
                <L[2]
                        <U4 CEID>
                        <L
                                <U2 RPTID>
                        ...
                        >
                >
        ...
        >
>
```

S2, F36 - Link Event Report Acknowledge

S, H<--E

Description: Link event report acknowledge or error. If an error condition is detected, the entire message is rejected.

Structure: <LRACK> B(1)

LRACK: Link Report Ack code

0 =	Accepted
1 =	Denied. Insufficient space
2 =	Denied. Invalid format
3 =	Denied. At least one CEID link already defined
4 =	Denied. No CEID exists.
5 =	Denied. No RPTID exists.
>5 =	Other errors
6-63 =	Reserved

Message format

S2F36

<B[1] LRACK>

S2, F37 - Enable/Disable Event Report

S, H-->E, Reply

Description: The purpose of this message for the host is to enable or disable reporting for a group of events (CEIDs).

Structure: L,2
1. <CEED> Boolean(1)
2. L,n #CEIDs
   1. <CEID1> U(4)
   :
   n. <CEIDn> U(4)

CEED: 0 = Disable event report
1 = Enable event report

Exception: A list of zero length following <CEED> means all CEIDs.

Message format
S2F37 W
<L[2]
<BOOLEAN CEED>
<L
<U4 CEID>
...
>
>

S2, F38 - Enable/Disable Event Report Acknowledge

S, H<--E

Description: Acknowledge of enable/disable event reporter error. If an error condition is detected, the entire message is rejected.

Structure: <ERACK>

ERACK: Enable/Disable Event Report Ack code - B(1)

0	=	Accepted
1	=	Denied. No CEID exists.
<1	=	Other errors
2-64	=	Reserved

Message format

S2F38

<B[1] ERACK>

S2, F39 - Multi-Block Inquire

S, H-->E,Reply

Description: If a S2F33, S2F35 or S2F45 message is more than one block, this transaction must precede the message.

Structure: L,2
1. <DATAID> U(2)
2. <DATALENGTH> U(4)

Message format
S2F39 W
<L[2]
<U2 DATAID>
<U4 DATALENGTH>
>

S2, F40 - Multi-Block Grant

S, H<--E

Description: Grant permission to send multi-block message.

Structure: <GRANT> B(1)
GRANT: Grant code

0 =	Positive response, load OK
1 =	Busy, try again
2 =	No space
3 =	Duplicate name
>3 =	Equipment specific error code
4-63 =	Reserved

Message format
S2F40
<B[1] GRANT>

S2, F41 - Host Command Send

M, H-->E, Reply

Description: Host requests for the equipment to perform specified remote command with the associated parameters.

Structure: L,2
1.<RCMD> A(??)
2.L,n
1.L,2
1.<CPNAME1> A(??)
2.<CPVAL1> ALL
:
n.L,2
1.<CPNAMEn> A(??)
2.<CPVALn> ALL

RCMD	Description
START_S	Full Automation Start
PP_SELECT_S	Process Program Name Change
STOP	Full Automation Stop
PAUSE	Full Automation Pause
RESUME	Full Automation Resume
PAUSE_H	Full Automation Pause
RESUME_H	Full Automation Resume
ABORT	Machine Initialize
EMERGENCY	Z-EM SW Emulation
I	Machine Initialize SW Emulation
INIT_S	Full Automation Initialize Emulation
1	Alignment Retry
2	Alignment Reject
3	Kerf Check Retry
4	Kerf Check Reject
7	PreCut Start
PP_START_S	Process Program Name Change and Full Automation Start
GO_LOCAL	LOCAL state transition
GO_REMOTE	REMOTE state transition
RECOVERY	Error Recovery Screen Display

Message format

S2F41 W
<L[2]
<A[?] RCMD>
<L[?]
<L[2]
<A CPNAME>
<CPVAL>
>
...
>
>

S2F41 –”PP_SELECT_S” , ”PP_START_S”

```
S2F41 W
<L[2]
        <A[11] “PP_SELECT_S”>       :PP_SELECT_S
        <L[2]
                <L[2]
                        <A “Port”>
                        <B[1] Port>         :Port Number
                                                1 = Port#1
                                                2 = Port#2 (Not Used)
                >
                <L[2]
                        <A “DEV_NO”>
                        <A PPID>            :RecipeName MAX 80Bytes
                >
        >
>
```

When PPID is selected already in “PP-SELECT_S” of “START_S ”, only port number is provided as a parameter.

```
S2F41 W
<L[2]
        <A[7] “START_S”>            :START_S / START_M
        <L[1]
                <L[2]
                        <A “Port”>
                        <B[1] Port>         :Port Number
                                                1 = Port#1
                                                2 = Port#2 (Not Used)
                >
        >
>
```

S2F41 – Other Command

```
S2F41 W
<L[2]
        <A[??] >      :RCMD
        <L[0]
>
```

S2, F42 - Host Command Acknowledge

S, H<--E

Description: Acknowledge or error response to host command request.

Structure: L,2
- 1.<HCACK> B(1)
- 2.L,n
  - 1.L,2
    - 1.<CPNAME1> A(??)
    - 2.<CPACK1> I(1)
  - :
  - :
  - n.L,2
    - 1.<CPNAMEn> A(??)
    - 2.<CPACKn> I(1)

HCACK:
- 0 = Acknowledge, command has been performed
- 1 = Command does not exist
- 2 = Cannot perform now
- 3 = At least one parameter is invalid
- 4 = Acknowledge, command will be performed with completion signaled later by an event
- 5-63 = Reserved
- 64 = Recipe name does not exists

CPACK:
- 1 = Parameter name (CPNAME) does not exist
- 2 = Illegal value specified for CPVAL
- 3 = Illegal format specified for CPVAL
- >3 = Other equipment-specific error
- 4-63 = Reserved

Exception: If there are no invalid parameters, a list of zero length will be sent for item 2.

Message format

```
S2F42
<L[2]
    <B[1] HCACK>
    <L
        <L[2]
            <A   CPNAME>
            <I1 CPACK>
        >
    ...
    >
>
```

S2, F43 - Reset Spooling Streams and Functions

S, H-->E, Reply

Description: This message allows the host to select specific streams and functions to be spooled whenever spooling is active.

Structure: L,m

1. L,2
   1. <STRID1> U(1)
   2. L,n
      1. <FCNID1> U(1)
      :
      :
      n. <FCNIDn> U(1)

:

m. L,2
   1. <STRIDm> U(1)
   2. L,n
      1. <FCNID1> U(1)
      :
      :
      n. <FCNIDn> U(1)

Exceptions:

1. For zero-length list, m = 0, turns off spooling for all streams and functions.
2. For zero-length list, n = 0, turns on spooling for all functions for the associated stream.

Message format

S2F43 W

```
<L
    <L[2]
        <U1 STRID>
        <L
            <U1 FCNID>
            …
        >
    >
    ...
>
```

S2, F44 - Reset Spooling Acknowledge

M, H<--E

Description: Acknowledge or error response to spooling stream, function setting

Structure: L,2
- 1. <RSPACK> B(1)
- 2. L,m
  - 1. L,3
    - 1. <STRID1> U(1)
    - 2. <STRACK1> B(1)
    - 3. L,n
      - 1. <FCNID1> U(1)
      - :
      - :
      - n. <FCNIDn> U(1)
  - :
  - m. L,3
    - 1. <STRID1> U(1)
    - 2. <STRACK1> B(1)
    - 3. L,n
      - 1. <FCNID1> U(1)
      - :
      - :
      - n. <FCNIDn> U(1)

Exceptions: If RSACK = 0, a zero-length list and m = 0 is given, indicating no streams or functions in error. A zero-length list, and n = 0, indicates no functions in error for specified stream.

RSPACK: Spool Data Set Ack code
- 0 = Spooling set accepted
- 1 = Denied.
- 2-63 = Reserved

STRACK: Spool Stream Ack code
- 1 = Spooling is not available for this stream (stream 1).
- 2 = Unknown stream
- 3 = Unknown function specified for this stream
- 4 = Secondary message assigned for this stream will not be spooled.
- 5-63 = Reserved

Message format

```
S2F44
<L[2]
        <B[1]   RSPACK>
        <L
                <L[3]
                        <U1    STRID>
                        <B[1] STRACK>
                        <L
                                <U1 FCNID>
                        ...
                        >
                >
        ...
        >
>
```

S2, F45 - Define Variable Limit Attributes

M, H-->E, Reply

Structure: L, 2
1. <DATAID>
2. L,m (m = # of variables in this definition)
    1. L, 2
        1. <VID1>
        2. L, n (n = # of limits being defined/changed for VID1)
            1. L,2
                1. <LIMITID1>
                2. L,p (p = 0 or 2)
                    1. <UPPERDB1>
                    2. <LOWERDB1>
            :
            :
            n. L,2
                1. <LIMITID1>
                2. L,p (p = 0 or 2)
                    1. <UPPERDB1>
                    2. <LOWERDB1>
    :
    :
    m. L, 2
        1. <VID1>
        2. L, n (n = # of limits being defined/changed for VID1)
            1. L,2
                1. <LIMITID1>
                2. L,p (p = 0 or 2)
                    1. <UPPERDB1>
                    2. <LOWERDB1>
            :
            n. L,2
                1. <LIMITID1>
                2. L,p (p = 0 or 2)
                    1. <UPPERDB1>
                    2. <LOWERDB1>

Exceptions:
1. A zero-length list and m = 0 set all limit values for all monitored VIDs to “undefined.”
2. "Zero-length list" and "n = 0" set all limit values for that VID to "undefined."
3. "Zero-length list" and "p = 0" set that limit to "undefined."

Message format

```
S2F45 W
<L[2]
        <U2   DATAID>
        <L
                <L[2]
                        <U2 VID>
                        <L
                                <L[2]
                                        <B[1]   LIMITID>
                                        <L[2]
                                                <UPPERDB>
                                                <LOWERDB>
                                        >
                                >
                        …
                        >
                >
        …
        >
>
```

S2, F46 - Variable Limit Attribute Acknowledge

M, H<--E

Description: Acknowledge definition of variable limit attributes or report error. If DVLA is not accepted due to one or more invalid parameters (e.g., LIMITACK = 3), then a list of invalid parameters is returned containing the variable limit attribute and reason for rejection. If an error condition is detected, the entire message is rejected, i.e., partial changes are not allowed.

Structure: L, 2
1. <LVAACK>
2. L,m (m = # of invalid parameters)
    1. L,3
        1. <VID1> (VID with error)
        2. <LVACK1>
        3. L,n (n = 0 or 2)
            1. <LIMITID1> (1st limit in error for VIDp)
            2. <LIMITACK1> (reason)
    :
    :
    m. L,3
        1. <VIDm> (VID with error)
        2. <LVACKm>
        3. L,n (n = 0 or 2)
            1. <LIMITIDm> (1st limit in error for VIDx)
            2. <LIMITACKm> (reason)

Exceptions: 1. "Zero-length list" and "m = 0" indicate no invalid variable limit attributes.
2. "Zero-length list" and "n = 0" indicate no invalid limit values for that VID.

VLAACK:	0 =	Acknowledge, command has been performed.
	1 =	Limit attribute definition error
	2 =	Cannot perform now
	>2 =	Other equipment errors
	3-63	Reserved

LVACK:	1 =	Variable does not exist.
	2 =	Variable does not have limit value.
	3 =	Variable does not have limit value.
	4 =	Limit value error as described in LIMITACK
	5 =	Number of the specified variables is over the limit
	6-63	Reserved

LIMITACK:	1 =	LIMITID does not exist
	2 =	UPPERDB>LIMITMAX
	3 =	LOWERDB<LIMITMIN
	4 =	UPPERDB<LOWERDB
	5 =	Incorrect format for UPPERDB and LOWERDB
	6 =	Cannot interpret as a numeric value because of ASCII value
	7 =	Limit definition for this variable is duplicated
	8 =	Number of the specified Limit ID is over the limit
	>8 =	Other equipment error
	9-63	Reserved

Exceptions: 1. "Zero-length list" and "m = 0" indicates there is no invalid variable limit attribute.
2. "Zero-length list" and "n = 0" indicate there is no invalid variable limit attribute for the VID.

Message format

```
S2F46
<L[2]
        <B[1]   LVAACK>
        <L
                <L[3]
                        <U2    VID>
                        <B[1] LVACK>
                        <L
                                <B[1] LIMITID>
                                <B[1] LIMITACK>
                        ...
                        >
                >
        …
        >
>
```

S2, F47 - Variable Limit Attribute Request

S, H-->E, Reply

Description: This message allows the host to query the equipment for current variable limit attribute definitions.

Structure: L, m (m = # of VIDs in this request)
1. <VID1>
:
:
m. <VIDm>

Exceptions: "Zero-length list" and "m = 0" request a list of all VID values that can have variable limit attributes.

Message format
S2F47 W
<L
<U2 VID>
...
>

S2, F48 - Variable Limit Attributes Send

M, H<--E

Description: Equipment sends values of requested variable limit attribute definitions in the order requested.

Structure: L,m (m = # of VIDs this request)

1. L,2
    1. <VID1>
    2. L,p (p = 0 or 4)
        1. <UNITS1>
        2. <LIMITMIN1>
        3. <LIMITMAX1>
        4. L,n (n = # of limits defined for this VID)
            1. L,3
                1. <LIMITID1>
                2. <UPPERDB1>
                3. <LOWERDB1>
            :
            n. L,3
                1. <LIMITIDn>
                2. <UPPERDBn>
                3. <LOWERDBn>

:

m. L,2
    1. <VIDm>
    2. L,p (p = 0 or 4)
        1. <UNITSm>
        2. <LIMITMINm>
        3. <LIMITMAXm>
        4. L,n (n = # of limits defined for this VID)
            1.L,3
                1. <LIMITIDm>
                2. <UPPERDBm>
                3. <LOWERDBm>
            :
            n. L,3
                1. <LIMITIDn>
                2. <UPPERDBn>
                3. <LOWERDBn>

Exceptions:
1. "Zero-length list" and "p = 0" indicate that limits are not supported for the VID.
2. "Zero-length list" and "n = 0" means no limits are currently defined for the specified variable.

Message format

```
S2F48
    <L
        <L[2]
            <U2 VID>
            <L
                <A UNITS>
                <LIMITMIN>
                <LIMITMAX>
                <L
                    <L[3]
                        <B[1] LIMITID>
                        <UPPERDB>
                        <LOWERDB>
                    >
                …
                >
            …
            >
        >
    …
    >
```

S5, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of an expected reply to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S5F0
Header Only

S5, F1 - Alarm Report Send

S, H<--E, Reply

Description: This message reports presence or cancel of an alarm condition.

Structure: L, 3

1. <ALCD> B(1)
2. <ALID> U(4)
3. <ALTX> A(40)

ALCD: If bit 8 is 1, alarm set. If bit 8 is 0, alarm clear.
ALID: Alarm code, 4 bytes
ALTX: Alarm text/message

Message format

S5F1 W
<L[3]
<B[1] ALCD>
<U4 ALID>
<A[40] ALTX>
>

S5, F2 - Alarm Report Acknowledge

S, H-->E

Description: Alarm acknowledge or error response

Structure: <ACKC5> Ack Code B(1)

ACKC5:	0 =	Accepted
	>0 =	Error, not accepted
	1-63 =	Reserved

Message format
S5F2
<B[1] ACK5>

S5, F3 - Enable/Disable Alarm Send

S, H-->E, Reply

Description: This message changes the state of the effective bit of the alarm notification in the equipment.

Structure: L, 2

1. <ALED>	Alarm enable/disable	B(1)
2. <ALID>	Alarm ID	U(4)

ALED: Bit8 = 1 (This means enabling an alarm.)
Bit8 = 0 (This means disabling an alarm.)

Exceptions: Zero-length item for <ALID> means setting/resetting of all alarms.

Message format

S5F3 W
<L[2]
<B[1] ALED>
<U4 ALID>
>

S5, F4 - Enable/Disable Alarm Acknowledge

S, H<--E

Description: Acknowledge or error.

Structure: <ACKC5> Ack Code B(1)

ACKC5:	0 =	Accepted
	>0 =	Error, not accepted
	1-63 =	Reserved
	64 =	ALID does not exist

Message format
S5F4
<B[1] ACK5>

S5, F5 - List Alarms Request (LAR)

S, H-->E, Reply

Description: This message requests the equipment to send alarm information to the host.

Structure: <ALID1,----,ALIDn> Alarm ID U(4) x n

Exception: A zero-length item means send all possible alarms regardless of the state of ALED.

Message format
S5F5 W
<U4 ALID ...>

M, H<--E

Description: Send alarm list data.

Structure: L,m

1. L,3
   1. <ALCD1> Alarm code byte B(1)
   2. <ALID1> Alarm ID U(4)
   3. <ALTX1> Alarm Text A(40)
2. L,3

:

:

m. L,3
   1. <ALCDm> Alarm code byte B(1)
   2. <ALIDm> Alarm ID U(4)
   3. <ALTXm> Alarm Text A(40)

Exception: If m = 0, no response can be mode. A zero length item returned for ALCDi or ALTXi means that value does not exist.

Message format

```
S5F6
<L
    <L[3]
        <B[1]   ALCD>
        <U4     ALID>
        <A[40] ALTX>
    >
...
>
```

S6, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of an expected reply to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S6F0
Header Only

S6, F1 - Trace Data Send (TDS)

S, H<--E, Reply

Description: This function sends samples to the host according to the trace setup done by S2, F23.
Trace is a time-driven form of equipment status.

Structure: L,4
1. <TRID>
2. <SMPLN>
3. <STIME>
4. L,n
    1. <SV1>
    2. <SV2>
    :
    :
    n. <SVn>

Exception: A zero-length <STIME> means no value is given and that the time is to be derived from <SMPLN> along with knowledge of the request.

Message format
S6F1 W
<L[4]
<U2 TRID>
<U2 SMPLN>
<A[16 or 12] STIME>
<L
<SV>
….
>
>

S6, F2 - Trace Data Acknowledge (TDA)

S, H-->E

Description: Acknowledge or error of S6, F1.

Structure: <ACKC6> Acknowledge Code B(1)

ACKC6:	0 =	Accepted
	>0 =	Error, not accepted
	1-63 =	Reserved

Message format
S6F2
<B[1] ACKC6>

S6, F5 - Multi-block Data Send Inquire (MBI)

S, H<--E,Reply

Description: If the discrete data report involve more than one block, this transaction must precede the transmission.

Structure: L,2

1. <DATAID>	Data ID	U(2)
2. <DATALENGTH>	Data length	U(4)

Message format

S6F5 W
<L[2]
    <U2 DATAID>
    <U4 DATALENGTH>
>

S6, F6 - Multi-block Grant (MBG)

S, H-->E

Description: Allow multi-block transmission or not.

Structure: <GRANT6> Grant permission to send B(1)

GRANT6:	0 =	Accepted
	1 =	Busy, try again
	2 =	No space
	3 =	No use
	>3 =	Other error
	3-63	Reserved

Message format
S6F6
<B[1] GRANT6>

S6, F11 - Event Report Send (ERS)

M, H<--E,Reply

Description: This message is for the equipment to send a defined reports to the host upon the occurrence of equipment status.

Structure: L,3

1. <DATAID> Data ID U(2)
2. <CEID> Collection event ID U(4)
3. L,a
    1. L,2
        1. <RPTID1> Report ID U(2)
        2. L,b
            1.<V1> Value ALL
            :
            b.<Vb> Value ALL
    :
    a. L,2
        1. <RPTIDa> Report ID U(2)
        2. L,c # Vs this report
            1.<V1> Value ALL
            :
            c.<Vc> Value ALL

Exception: If there are no reports linked to the event, a “null” report is assumed. A zero length list for # of reports means there are no reports linked to the given CEID.

Message format

```
S6F11 W
<L[3]
    <U2 DATAID>
    <U4 CEID>
    <L
        <L[2]
            <U2 RPTID>
            <L
                <V>
            ...
            >
        >
    ...
    >
>
```

S6, F12 - Event Report Acknowledge (ERA)

S, H-->E

Description: Acknowledge or error

Structure: <ACKC6> Ack Code B(1)
ACKC6: 0 = Accepted
>0 = Error, not accepted
1-63 Reserved

Message format
S6F12
<B[1] ACKC6>

S6, F15 - Event Report Request (ERR)

S, H-->E, Reply

Description: The purpose of this message is for the host to demand a given report group from the equipment.

Structure: <CEID> Collection event ID U(4)

Message format
S6F15 W
<U 4 CEID>

S6, F16 Event Report Data (ERD)

M, H<--E

Description: Equipment sends reports linked to given CEID to the host.

Structure: L,3
- 1. <DATAID> Data ID U(2)
- 2. <CEID> Collection event ID U(4)
- 3. L,a
  - 1. L,2
    - 1. <RPTID1> Report ID U(2)
    - 2. L,b
      - 1. <V1> Value ALL
      - :
      - b. <Vb> Value ALL
  - :
  - a. L,2
    - 1. <RPTIDa> Report ID U(2)
    - 2. L,c # Vs this report
      - 1. <V1> Value ALL
      - :
      - c. <Vc> Value ALL

Exception: If there are no reports linked to the event, a “null” report is assumed.
A zero length list for # of reports means there are no reports linked to the given CEID.

Message format

```
S6F16
<L[3]
        <U2 DATAID>
        <U4 CEID>
        <L
                <L[2]
                        <U2 RPTID>
                        <L
                                <V>
                        ...
                        >
                >
        ...
        >
>
```

S6, F19 - Individual Report Request (IRR)

S, H-->E, Reply

Description: The purpose of this message is for the host to request a defined report from the equipment.

Structure: <RPTID> ReportID U(2)

Message format
S6F19 W
<U2 RPTID>

S6, F20 - Individual Report Data (IRD)

M, H<--E

Description: Equipment sends variable data defined for the given RPTID to the host.

Structure: L,n

1. <V1> ALL
:
n. <Vn> ALL

V values

Exception: A zero length list means RPTID is not defined.

Message format

S6F20
<L
<V>
...
>

S6,F23 - Request Spooled Data (RSD)

S, H-->E, Reply

Description: The purpose of this message is for the host to request transmission or deletion of the messages currently spooled by the equipment.

Structure: <RSDC> Spool Data Request code U(1)

RSDC:	0 =	Spooled messages transmission
	1 =	Spooled messages deletion
	2-63	Reserved

Message format
S6F23 W
<U1 RSDC>

S6, F24 - Request Spooled Data Acknowledgement Send (RSDAS)

S, H<--E

Description: The purpose of this message is to acknowledge the receipt of the Requested Spooled Data and to respond with an appropriate acknowledge code.

Structure: <RSDA> B(1)

RSDA:	0 =	OK
	1 =	Denied, busy, try again
	2 =	Denied, no spool data exists
	3-63	Reserved

Message format
S6F24
<B[1] RSDA>

S7, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of an expected reply to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S7F0
Header Only

S7, F1 - Process Program Load Inquire (PPI)

S, H<->E,Reply

Description: This message is used to initiate the transfer of a process program or disk file.

Structure: L,2

1. <PPID>	Process program ID	A(??)	MAX80
2. <LENGTH>	Length	U(4)	

PPID: Recipe name
LENGTH: Process program length

Message format

S7F1 W
<L[2]
<A PPID>
<U4 LENGTH>
>

S7, F2 - Process Program Load Grant (PPG)

S, H<-->E

Description: This message gives permission for the process program to be loaded.

Structure: <PPGNT> Process program grant status B(1)

PPGNT:	0 =	OK
	1 =	Load already
	2 =	No space
	3 =	Invalid PPID
	4 =	Busy, try again
	5 =	Denied
	>5 =	Other error
	6-64	Reserved

Message format
S7F2
<B[1] PPGNT>

S7, F3 - Process Program Send (PPS)

M, H<-->E, Reply

Description: Process program send

Structure: L,2

1. <PPID>	Process program ID	A(??)	MAX80
2. <PPBODY>	Process program body	B(n)	

PPID: Recipe name
PPBODY: Process program body

Message format

S7F3 W
<L[2]
<A PPID>
<B PPBODY>
>

S7, F4 - Process Program Acknowledge (PPA)

S, H<-->E

Description: Acknowledge or error

Structure: <ACKC7> Ack Code B(1)

ACKC7:	0 =	Accepted
	1 =	Denied
	2 =	Length error
	3 =	Reserved
	4 =	PPID not found
	5 =	Mode unsupported
	>5 =	Other error
	6-64	Reserved

Message format
S7F4
<B[1] ACKC7>

S7, F5 - Process Program Request (PPR)

S, H<-->E,Reply

Description: This message is used to request the transfer of a process program.

Structure: <PPID> Process program ID A(??) MAX80

PPID: Recipe name

Message format
S7F5 W
<A PPID>

S7, F6 - Process Program Data (PPD)

M, H<-->E

Description: This message is used to transfer a process program.

Structure: L,2

1. <PPID>	Process program ID	A(??)	MAX80
2. <PPBODY>	Process program body	B(n)	

PPID: Revipe name
PPBODY: Process program body

Message format

S7F6
<L[2]
<A PPID>
<B PPBODY>
>

S7, F17 - Delete Process Program Send (DPS)

S, H-->E, Reply

Description: This message is used by the host to request that the equipment delete process programs.

Structure: L,n

1. <PPID1>	Process program ID	A(??)	MAX80
:			
n. <PPIDn>	Process program ID	A(??)	MAX80

PPID: Recipe name

Exception: If n = 0, delete all the process programs.

Message format

S7F17 W
<L
    <A PPID>
    ...
>

S7, F18 - Delete Process Program Acknowledge (DPA)

S, H<--E

Description: Acknowledge or error.

Structure: <ACKC7> Acknowledge code B(1)

ACKC7:	0 =	Accepted
	1 =	Denied
	2 =	Length error
	3 =	Reserved
	4 =	PPID is not found
	5 =	Mode is unsupported
	>5 =	Other error
	6-64	Reserved

Message format
S7F18
<B[1] ACKC7>

S7, F19 - Current EPPD Request (RER)

S, H-->E, Reply

Description: The host requests the equipment to send a recipe name.

Structure: Header only

Message format
S7F19 W
Header Only

S7, F20 - Current EPPD Data (RED)

M, H<--E

Description: This message is used to transmit the list of process program ID = PPID.

Structure: L,n

1.<PPID1>	Process program ID	A(??)	MAX80
:			
n.<PPIDn>	Process program ID	A(??)	MAX80

PPID: Recipe name

Exception: The equipment sends a zero-length list for no device list to the host.

Message format

S7F20
<L
    <A PPID>
    ...
>

S9, F1 - Unrecognized Device ID (UDN)

S, H<--E

Description: The device ID in the message block header did not correspond to any known device ID in the node detecting the error.

Structure: <MHEAD> Message Block Header B(10)

Message format
S9F1
<B[10] MHEAD>

S9, F3 - Unrecognized Stream Type (USN)

S, H<--E

Description: The equipment does not recognize the stream type in the message block header.

Structure: <MHEAD> SECS Message Block Header B(10)

Message format
S9F3
<B[10] MHEAD>

S9, F5 - Unrecognized Function Type (UFN)

S, H<--E

Description: The equipment does not recognize the function type in the message block header.

Structure: <MHEAD> SECS Message Block Header B(10)

Message format
S9F5
<B[10] MHEAD>

S9, F7 - Illegal Data (IDN)

S, H<--E

Description: This message indicates that the stream and function were recognized but the associated data format could not be interpreted.

Structure: <MHEAD> SECS Message Block Header B(10)

Message format
S9F7
<B[10] MHEAD>

S9, F9 - Transaction Timer Timeout (TTN)

S, H<--E

Description: This message indicates that a transaction (receive) timer has timed out and that the corresponding transaction has been aborted. User can select from the following timings;
1) Timeout between multi-blocks
2) T3 retry timeout

Structure: <SHEAD> Stored header related to transaction timer B(10)

Message format
S9F9
<B[10] SHEAD>

S9, F11 - Data Too Long (DLN)

S, H<--E

Description: Used to indicate that the equipment has been set more data than it can handle.

Structure: <MHEAD> SECS Message Block Header B(10)

Message format
S9F11
<B[10] MHEAD>

S9, F13 - Conversation Timeout (CTN)

S, H<--E

Description: Data were expected but none were received within a reasonable length of time. Resources have been cleared.

Structure: L,2

1. <MEXP>	Message expected in the from SxxFyy	A(6)
2. <EDID>	Expected data ID	ALL

Possible responses

MEXP	EDID	EDID
S07F03	<PPID>	A(16)

Message format

S9F13
<L[2]
<A[6] MEXP>
<EDID>
>

S10, F0 - Abort Transaction

S, H<->E

Description: Used in lieu of an expected reply to abort a transaction. Function 0 is defined in every stream and has the same meaning in every stream.

Structure: Header only

Message format
S10F0
Header Only

S10, F1 - Terminal Request (TRN)

S, H<--E, Reply

Description: A terminal text message to the host.

Structure: L,2
<TID>
<TEXT>

Message format
S10F1 W
<L[2]
<B[1] TID>
<A TEXT>
>

S10, F2 - Terminal Request Acknowledge (TRA)

S, H-->E

Description: Acknowledge or error.

Structure: < ACKC10 > Ack Code B(1)

ACKC10:	0 =	Accepted (It is available to display)
	1 =	Error, not accepted (Messages are not displayed)
	2 =	Error, not accepted (No terminal exists)
	3-63	Reserved

Message format
S10F2
<B[1] ACKC10>

S10, F3 - Terminal Display, Single (VTN)

S, H-->E, Reply

Description: Data to be displayed on the equipment terminal.

Structure: L,2
1. <TID>
2. <TEXT>

Message format
S10F3 W
<L[2]
<B[1] TID>
<A TEXT>
>

S10, F4 - Terminal Display, Single Acknowledge (VTA)

S, H<--E

Description: Acknowledge or error.

Structure: < ACKC10> Ack Code B(1)

ACKC10:	0 =	Accepted (It is available to display)
	1 =	Error, not accepted (Messages are not displayed)
	2 =	Error, not accepted (No terminal exists)
	3-63	Reserved

Message format
S10F4
<B[1] ACKC10>

S10, F5 - Terminal Display, Multi-block (VMN)

M, H-->E, Reply

Description: Data to be displayed on the equipment terminal.

Structure: L,2
1. <TID>
2. L,n
    1. <TEXT1>
    :
    :
    n. <TEXTn>

Message format
S10F5 W
<L[2]
    <B[1] TID>
    <L
        <A TEXT>
        …
    >
>

S10, F6 - Terminal Display, Multi-block Acknowledge (VMA)

S, H<--E

Description: Acknowledge or error.

Structure: < ACKC10> Ack Code B(1)

ACKC10:	0 =	Accepted (It is available to display)
	1 =	Error, not accepted (Messages are not displayed)
	2 =	Error, not accepted (No terminal exists)
	3-63	Reserved

Message format
S10F6
<B[1] ACKC10>

9. Lists of Variables and Constants

Outline

This section explains the variables and constants controlled by the equipment.

9-1. Variables List

SVID

		SVVAL Data Definition								Host Access Accepted		
SVID	SVNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	In Process	Remote	Local
1000	FA_Mode	20	1	N/A	N/A	N/A	N/A	0=LOCAL 1=REMOTE		RO	RO	RO
1001	OP_Mode	20	1	N/A	N/A	N/A	N/A	0=NEUTRAL 1=FULL AUTO 2=MANUAL		RO	RO	RO
1002	AlarmsEnabled	0,54	n	N/A	N/A	N/A	N/A		Alarm event list	RO	RO	RO
1004	Clock	20	16/12	N/A	N/A	N/A	N/A		Now Date&Time Format Control: TimeFormat (ECID: 4010) 0: 12 bytes YYMMDDHHmmss 1: 16 bytes YYYYMMDDHHmmsscc	RO	RO	RO
1005	ControlState	10	1	N/A	N/A	N/A	N/A			RO	RO	RO
1006	EventsEnabled	0,54	n	N/A	N/A	N/A	N/A		Enabled event list	RO	RO	RO
1007	PPExecName	20	n	N/A	N/A	N/A	N/A		PPID(s) of the currently selected process program(s)	RO	RO	RO
1008	PreviousProcessState	51	1	N/A	N/A	N/A	N/A	0=INIT 1=IDLE 2=SETUP 3=READY 4=EXECUTE 5=PAUSE 6=ALARM		RO	RO	RO
1009	ProcessState	51	1	N/A	N/A	N/A	N/A	:		RO	RO	RO
1010	COM_MODE	20	1	N/A	N/A	N/A	N/A	0=ATTEMPT ON-LINE 1=EQUIPMENT OFF-LINE 2=HOST OFF-LINE 3=ON-LINE		RO	RO	RO

		SVVAL Data Definition								Host Access Accepted		
SVID	SVNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	In Process	Remote	Local
Spool Data												
1020	SpoolCountActual	54	4	N/A	N/A	N/A	N/A		Count of the messages actually in spool area	RO	RO	RO
1021	SpoolCountTotal	54	4	N/A	N/A	N/A	N/A		Total count of primary message in spool area	RO	RO	RO
1022	SpoolFullTime	20	16	N/A	N/A	N/A	N/A		Time stamp when the spool last became full.	RO	RO	RO
1023	SpoolStartTime	20	16	N/A	N/A	N/A	N/A		Time stamp when spooling was last activated.	RO	RO	RO
1024	SpoolStatus	51	1	N/A	N/A	N/A	N/A	0=Not Active 1=Active	Current spool state	RO	RO	RO
1025	SpoolFull	51	1	N/A	N/A	N/A	N/A	0=Not Full 1=Full	Whether the current spool area is full or not full.	RO	RO	RO
Stage Status												
1101	CTStatus	52	2	N/A	0	0	8	<Stage State> 0=Init 1=Idle 2=Alignment 3=Cut 4=Kerf Check 5=Set-up 7=End 8=Disable		RO	RO	RO
CT Information												
1232	CT_DEV	20	n	N/A	N/A	N/A	N/A		Wafer No. on CT	RO	RO	RO
1233	WORK_CT	52	2	N/A	N/A	N/A	N/A		Slot No. of Wafer on CT (Fixed to 1)	RO	RO	RO
Blade Variable Condition												
1300	AUTODOWN_D	34	4	nm	N/A	N/A	N/A		Auto Z axis down value	RO	RO	RO
1302	BLADE_EDGE	34	4	nm	N/A	N/A	N/A		Z1 blade edge value	RO	RO	RO
1304	BLADE_WASTE	34	4	nm	N/A	N/A	N/A		Wear amount from blade change	RO	RO	RO
1306	BLADE_LAST	34	4	mm	N/A	N/A	N/A		Blade wear amount from last setup	RO	RO	RO
1308	BLADE_L1	34	4	mm	N/A	N/A	N/A		Cumulative blade life from blade change (Length)	RO	RO	RO
1310	SETUP_L1	34	4	mm	N/A	N/A	N/A		Cumulative blade life from last setup (Length)	RO	RO	RO
1312	USER_L1	34	4	mm	N/A	N/A	N/A		Cumulative blade life from last reset (Length)	RO	RO	RO

		SVVAL Data Definition								Host Access Accepted		
SVID	SVNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	In Process	Remote	Local
1314	COUNT_BLADE	34	4	N/A	N/A	N/A	N/A		Cumulative blade life from blade change (No. of lines)	RO	RO	RO
1316	COUNT_SETUP	34	4	N/A	N/A	N/A	N/A		Cumulative blade life from last setup (No. of lines)	RO	RO	RO
1318	COUNT_USER	34	4	N/A	N/A	N/A	N/A		Cumulative blade life from last reset (No. of lines)	RO	RO	RO
1320	B_CT_POSZ	34	4	nm	N/A	N/A	N/A		Setup position (Height)	RO	RO	RO
Cut Variable Condition												
1350	NOW_CUT_L	34	4	nm	N/A	N/A	N/A		Cutting lines	RO	RO	RO
1351	NOW_SPEED	34	4	nm/sec	N/A	N/A	N/A		Cutting speed	RO	RO	RO
1352	NOW_HEIGHT	34	4	nm	N/A	N/A	N/A		Cutting Z1 blade height	RO	RO	RO
Alignment Condition												
1380-1389	CH_Q[0-9]	34	4	%	N/A	N/A	N/A		Q value of target at alignment 0: Value of MACRO 1-9: Value of MICRO in each channel	RO	RO	RO
Kerf Check Variable Condition												
1400	KERF_CENTER	34	4	nm	N/A	N/A	N/A		Off center	RO	RO	RO
1402	KERF_CHIP_A	34	4	pixel	N/A	N/A	N/A		Chipping area	RO	RO	RO
1404	KERF_CHIP_W	34	4	nm	N/A	N/A	N/A		Chipping max	RO	RO	RO
1406	KERF_HALF	34	4	nm	N/A	N/A	N/A		Kerf width (Center–Chipping)	RO	RO	RO
1408	KERF_MAX_W	34	4	nm	N/A	N/A	N/A		Kerf width (Include chipping)	RO	RO	RO
1410	KERF_POINT	34	4	%	N/A	N/A	N/A		Kerf point No.	RO	RO	RO
1412	KERF_WIDTH	34	4	nm	N/A	N/A	N/A		Kerf width	RO	RO	RO
Spinndle Variable Condition												
1500	DCBL_REV	34	4	rpm	0	0	60000		Current spindle revolution speed	RO	RO	RO
1502	DCBL_CUR	34	4	*10-3(A)	0	0	9999999		Current spindle load current	RO	RO	RO
Work Counter												
1520	COUNT_WORK	34	4	N/A	N/A	N/A	N/A		Total processed work count	RO	RO	RO
1522	PEACE_FIN	34	4	N/A	N/A	N/A	N/A		Processed work count (Number of processed work sheets in 1 full auto)	RO	RO	RO

		SVVAL Data Definition								Host Access Accepted		
SVID	SVNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	In Process	Remote	Local
Other Variable Condition												
1550	PAT_MODE	20	n	N/A	N/A	N/A	N/A	IDLE/ALARM/AUTO/AUTO1/ FULLAUTO/WAIT/MANUAL/ CALL0/CALL2/USER		RO	RO	RO
1551	ERRF	34	4	N/A	-1	-1	N/A	Error number (except for -1 and 0)	Error control flag	RO	RO	RO
1552	CUTF	10	1	N/A	0	0	1	1=Z1 axis cut status 0=Others	Z1 cutting flag	RO	RO	RO
1554	INITIALF	10	1	N/A	0	0	1	1=System initial completed 0=Not completed yet	System initial flag	RO	RO	RO
1555	WATERF	10	1	N/A	0	0	1	0=OFF 1=Cutting water of Z1 axis is ON. 0=Cutting water of Z1 axis is OFF.	Water 1 ON/OFF flag	RO	RO	RO
1557	SETUPF	10	1	N/A	0	0	1	1=Z1 axis set up completed	Z1 setup flag	RO	RO	RO
1559	SPNDLF	10	1	N/A	0	0	1	1=Z1 axis SPNDL-ON 0=Z1 axis SPNDL-OFF	Spindle 1 ON/OFF flag	RO	RO	RO
1600-1631	MAP_DI[0-31]	52	2	N/A	N/A	N/A	N/A	MAP_DI[0] 1=No.1 of Port 0 is ON. 2=No.2 of Port 0 is ON. 65535=All of Port 0are ON.	Data (bit) of 16 points DI board port = n.	RO	RO	RO
1650-1681	MAP_DO[0-31]	52	2	N/A	N/A	N/A	N/A	MAP_DO[0] 1=No.1 of Port 0 is ON. 2=No.2 of Port 0 is ON. 65535=All of Port 0 are ON.	Data (bit) of 16 points DO board port = n.	RO	RO	RO
1690	CT_Vacume_State	10	1	N/A	0	0	1	0=OFF 1=ON	This indicates whether vacuum on CT is ON or OFF.	RO	RO	RO

9-2. List of Constants

ECID

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
4000	InitCommState	52	2	N/A	0	0	2	0=Undefined 1=Enable 2=Disable	Host Communicate Function	RO	RO	RO
4002	GEM_ESTTM	52	2	sec	15	1	99		Defines the delay timer in second between attempts to send S1, F13.	RO	RO	RO
4003	GEM_TO_TC	52	2	sec	30	1	99		Defines the conversation timer for S7, F3.	RO	RO	RO
4004	GEM_TRANS	52	2	N/A	0	0	32767		Initial value to set transaction ID in system byte to be unique.	RO	RO	RO
4005	GEM_BRATE	52	2	bps	9600	300	9600	300/1200/2400/4800/9600	Set serial transfer speed.	RO	RO	RO
4006	GEM_DEVID	52	2	N/A	1	0	32767		Identifier assigned to the equipment.	RO	RO	RO
4007	GEM_TO_T1	52	2	ms	500	100	10000		Detects an interruption between characters.	RO	RO	RO
4008	GEM_TO_T2	52	2	ms	10000	200	25000		Detects a lack of protocol response.	RO	RO	RO
4009	GEM_TO_T3	52	2	sec	45	1	120		Detects a lack of reply message.	RO	RO	RO
4010	GEM_TO_T4	52	2	sec	45	1	120		Detects an interruption in a multi-block message.	RO	RO	RO
4011	GEM_TO_T5	52	2	sec	10	1	240		HSMS: Separation timeout	RO	RO	RO
4012	GEM_TO_T6	52	2	sec	5	1	240		HSMS: Control transaction timeout	RO	RO	RO
4013	GEM_TO_T7	52	2	sec	10	1	240		HSMS: Selected timeout	RO	RO	RO
4014	GEM_TO_T8	52	2	sec	5	1	120		HSMS: An interruption between characters on network			
4015	HSMS_ConnectMode	51	1	N/A	0	0	1	0=Passive 1=Active		RO	RO	RO
4016	HSMS_RemoteNode_IP	20	n	N/A	N/A	N/A	N/A		Remote node IP address	RO	RO	RO
4017	HSMS_PortNo	51	1	N/A	N/A	N/A	N/A		TCP Port No.	RO	RO	RO
4019	HSMS_RemoteCheck	10	1	N/A	0	0	1	0=Disable 1=Enable		RO	RO	RO
4020	MaxSpoolTransmit	54	4	N/A	0	N/A	N/A	<Spooling> 0=ALL	Maximum number of messages for transmitting from the spool in response to an S6F23	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
4021	OverWriteSpool	11	1	N/A	0	N/A	N/A	<Spooling> 0=True	Designate either to overwrite data in the spool area or to stop spooling whenever the spool area limits are exceeded	RO	RO	RO
4022	SpoolMax	52	2	KB	0	0	N/A		Spool file maximum size	RO	RO	RO
4023	Spool	10	1	N/A	0	0	1	0= Not use 1=Use	Whether the spool is used or not.	RO	RO	RO
4024	TimeFormat	10	1	N/A	1	0	1	0=12 byte YYMMDDHHmmss 1=16 byte YYYYMMDDHHmmsscc	Time format control	RO	RO	RO
4025	MDLN	20	6	N/A	N/A	N/A	N/A	S1F1/F2, S1F13/F14	Equipment model name	RO	RO	RO
4026	SoftwareRevisionCode	20	6	N/A	N/A	N/A	N/A	S1F1/F2, S1F13/F14	Revision code of communication software	RO	RO	RO
4027	SOFTREV	20	6	N/A	N/A	N/A	N/A		Revision code of equipment control software	RO	RO	RO
4029	GEM_RETRY	51	1	Times	3	0	31		Max. permissible resend times	RO	RO	RO
4040	InitControlState	10	1	N/A	2	1	2	1 (OnLine) / 2 (OffLine)	Communication initialize data			
4041	OnlineSubState	10	1	N/A	4	4	5	4 (Local) / 5 (Remote)	Initialize data for on-line			
4042	OfflineSubState	10	1	N/A	2	1	3	1 (Equipment Offline) / 2 (Attempt Online) / 3 (HOST Offline)	Initialize data for off-line			
4043	OnlineFailure	10	1	N/A	1	1	3	1 (Equipment Offline) / 3 (HOST Offline)	Initialize data for on-line fail			
Component												
4100	UNIT_MODE	20	n	N/A	MM	MM	INCH	MM/INCH	Unit	RO	RO	RO
4101	ALI_PASS	20	n	N/A	YES	N/A	N/A	YES/NO	Function pass (ALIGNMENT)	RO	RO	RO
4102	CUT_PASS	20	n	N/A	YES	N/A	N/A	YES/NO	Function pass (CUT)	RO	RO	RO
4104	SPNDL1_PASS	20	n	N/A	YES	N/A	N/A	YES/NO	Function pass (SPINDLE1)	RO	RO	RO
4106	DETCT_PASS	20	n	N/A	YES	N/A	N/A	YES/NO	Function pass (BBD)	RO	RO	RO
4108	UNSET_PASS	20	n	N/A	YES	N/A	N/A	YES/NO	Function pass (NCS)	RO	RO	RO
4116	LANGUAGE	20	n	N/A	JAPANESE	N/A	N/A	JAPANESE/ENGLISH/ CHINESE	Language specification for display			

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
Device Data Current Recipe												
4200	DEV_ID	20	n	N/A	Null	N/A	N/A		PPID to be used	RO	RO	RO
4202	PSPEC_NO	20	n	N/A	Null	N/A	N/A		Precut data to be used	RO	RO	RO
4203	UNIT_DEV	20	n	N/A	Null	N/A	N/A	MM/INCH	Unit	RO	RO	RO
4204	SPNDL_REV	54	4	Rpm	0	6000	60000		Spindle revolution (2.2kW: lower limit = 3000, Upper limit = 30000)	RO	RO	RO
4230	CUT_PAT	20	n	N/A	Null	N/A	N/A	ROUND/SQUARE	Cut workpiece shape	RO	RO	RO
4231	WORK_SIZER	54	4	nm	0	0	300000000		Workpiece size (Round)	RO	RO	RO
4232	WORK_SIZE1	54	4	nm	0	0	300000000		Workpiece size CH1 (Square)	RO	RO	RO
4233	WORK_SIZE2	54	4	nm	0	0	300000000		Workpiece size CH2 (Square)	RO	RO	RO
4234	WORK_THICK	54	4	nm	0	0	10000000		Workpiece thickness	RO	RO	RO
4235	TAPE_THICK	54	4	nm	0	0	100000		Tape thickness	RO	RO	RO
4460	CUT_CH	20	N	N/A	N/A	N/A	N/A	123/321/213 etc.	Cut channel sequence	RO	RO	RO
4441-4444	POST_CH[1-4]	34	4	10-6 deg	0	-50000000	280000000		θ-axis angle (by channel)	RO	RO	RO
4211-4214	CUT_MODE[1-4]	20	n	N/A	Null	N/A	N/A	A,/B/B_ZKEEP/A_UP/ A_CHOP/B_CHOP/ A_UP_CHOP	Cut mode (by channel)	RO	RO	RO
4451-4454	DIR_CH[1-4]	20	n	N/A	REAR	N/A	N/A	FRONT/REAR	Cut direction (by channel)	RO	RO	RO
4501-4504	TOTOAL_LINE[1-4]	34	4	N/A	0	0	9999		Cut lines (by channel)	RO	RO	RO
4471-4474	ALIGN_CH[1-4]	34	4	nm	0	-999999900	999999900		Align (by channel)	RO	RO	RO
4481-4484	SKIP_F_CH[1-4]	34	4	nm	0	-999999900	999999900		Noncut area, front (by channel)	RO	RO	RO
4491-4494	SKIP_R_CH[1-4]	34	4	nm	0	-999999900	999999900		Noncut area, rear (by channel)	RO	RO	RO
10001-10004	OFFSET_X_CH[1-4]	34	4	nm	0	-999999000	999999000		Offset X (by channel)	RO	RO	RO
10011-10014	OFFSET_T_CH[1-4]	34	4	10-6 deg	0	-999999000	999999000		Offset θ (by channel)			
11000-11029	CH1_HEI[0-29]	54	4	nm	0	0	5000000		Blade height (CH1)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
11030-11059	CH2_HEI[0-29]	54	4	nm	0	0	5000000		Blade height (CH2)	RO	RO	RO
11060-11089	CH3_HEI[0-29]	54	4	nm	0	0	5000000		Blade height (CH3)	RO	RO	RO
11090-11119	CH4_HEI[0-29]	54	4	nm	0	0	5000000		Blade height (CH4)	RO	RO	RO
11120-11149	CH1_SPD[0-29]	54	4	nm/sec	0	0	600000000		Feed speed (CH1)	RO	RO	RO
11150-11179	CH2_SPD[0-29]	54	4	nm/sec	0	0	600000000		Feed speed (CH2)	RO	RO	RO
11180-11209	CH3_SPD[0-29]	54	4	nm/sec	0	0	600000000		Feed speed (CH3)	RO	RO	RO
11210-11239	CH4_SPD[0-29]	54	4	nm/sec	0	0	600000000		Feed speed (CH4)	RO	RO	RO
11240-11269	CH1_IDX[0-29]	54	4	nm	0	0	300000000		Y-index (CH1)	RO	RO	RO
11270-11299	CH2_IDX[0-29]	54	4	nm	0	0	300000000		Y-index (CH2)	RO	RO	RO
11300-11329	CH3_IDX[0-29]	54	4	nm	0	0	300000000		Y-index (CH3)	RO	RO	RO
11330-11359	CH4_IDX[0-29]	54	4	nm	0	0	300000000		Y-index (CH4)	RO	RO	RO
11360-11389	CH1_REP[0-29]	54	4	N/A	0	0	999		Repeat times (CH1)	RO	RO	RO
11390-11419	CH2_REP[0-29]	54	4	N/A	0	0	999		Repeat times (CH2)	RO	RO	RO
11420-11449	CH3_REP[0-29]	54	4	N/A	0	0	999		Repeat times (CH3)	RO	RO	RO
11450-11479	CH4_REP[0-29]	54	4	N/A	0	0	999		Repeat times (CH4)	RO	RO	RO
11480-11509	CH1_DEP[0-29]	54	4	nm	0	0	10000000		Depth steps (CH1)	RO	RO	RO
11510-11539	CH2_DEP[0-29]	54	4	nm	0	0	10000000		Depth steps (CH2)	RO	RO	RO
11540-11569	CH3_DEP[0-29]	54	4	nm	0	0	10000000		Depth steps (CH3)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
11570-11599	CH4_DEP[0-29]	54	4	nm	0	0	10000000		Depth steps (CH4)	RO	RO	RO
11600-11629	CH1_LOOP[0-29]	20	n	N/A	Null	N/A	N/A	S / 1–999	Loop (CH2)	RO	RO	RO
11630-11659	CH2_LOOP[0-29]	20	n	N/A	Null	N/A	N/A	S / 1–999	Loop (CH3)	RO	RO	RO
11660-11689	CH3_LOOP[0-29]	20	n	N/A	Null	N/A	N/A	S / 1–999	Loop (CH4)	RO	RO	RO
11690-11719	CH4_LOOP[0-29]	20	n	N/A	Null	N/A	N/A	S / 1–999	Loop (CH1)	RO	RO	RO
11720-11749	CH1_DSPDZ[0-29]	54	4	nm/sec	0	0	50000000		Z down speed (CH1)	RO	RO	RO
11750-11779	CH2_DSPDZ[0-29]	54	4	nm/sec	0	0	50000000		Z down speed (CH2)	RO	RO	RO
11780-11809	CH3_DSPDZ[0-29]	54	4	nm/sec	0	0	50000000		Z down speed (CH3)	RO	RO	RO
11810-11839	CH4_DSPDZ[0-29]	54	4	nm/sec	0	0	50000000		Z down speed (CH4)	RO	RO	RO
11840-11869	CH1_XOFF[0-29]	34	4	nm	0	-250000000	250000000		X-Offset (CH1)	RO	RO	RO
11870-11899	CH2_XOFF[0-29]	34	4	nm	0	-250000000	250000000		X-Offset (CH2)	RO	RO	RO
11900-11929	CH3_XOFF[0-29]	34	4	nm	0	-250000000	250000000		X-Offset (CH3)	RO	RO	RO
11930-11959	CH4_XOFF[0-29]	34	4	nm	0	-250000000	250000000		X-Offset (CH4)	RO	RO	RO
11960-11989	CH1_XSTROK[0-29]	54	4	nm	0	0	250000000		X-Length (CH1)	RO	RO	RO
11990-12019	CH2_XSTROK[0-29]	54	4	nm	0	0	250000000		X-Length (CH2)	RO	RO	RO
12020-12049	CH3_XSTROK[0-29]	54	4	nm	0	0	250000000		X-Length (CH3)	RO	RO	RO
12050-12079	CH4_XSTROK[0-29]	54	4	nm	0	0	250000000		X-Length (CH4)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
12080-12109	CH1_XLEN[0-29]	54	4	nm	0	0	250000000		Pitch (CH1)	RO	RO	RO
12110-12139	CH2_XLEN[0-29]	54	4	nm	0	0	250000000		Pitch (CH2)	RO	RO	RO
12140-12169	CH3_XLEN[0-29]	54	4	nm	0	0	250000000		Pitch (CH3)	RO	RO	RO
12170-12199	CH4_XLEN[0-29]	54	4	nm	0	0	250000000		Pitch (CH4)	RO	RO	RO
12200-12229	CH1_XTIMES[0-29]	54	4	N/A	0	0	999		Chopper times (CH1)	RO	RO	RO
12230-12259	CH2_XTIMES[0-29]	54	4	N/A	0	0	999		Chopper times (CH2)	RO	RO	RO
12260-12289	CH3_XTIMES[0-29]	54	4	N/A	0	0	999		Chopper times (CH3)	RO	RO	RO
12290-12319	CH4_XTIMES[0-29]	54	4	N/A	0	0	999		Chopper times (CH4)	RO	RO	RO
Alignment Data in Current Recipe												
4530	ALI_MODE	20	n	N/A	NORMAL	N/A	N/A	NORMAL/SPECIAL	Alignment mode	RO	RO	RO
4531	ALI_PATRN	20	n	N/A	A	N/A	N/A	A	Alignment pattern	RO	RO	RO
4532	ALI_TIM_LIM	34	4	sec	0	0	999		Time out	RO	RO	RO
4533	ALU_RETRY	34	4	times	0	0	9		Retry count	RO	RO	RO
4534	ALU_PERCENT	34	4	%	0	0	100		θ adjust stroke	RO	RO	RO
4535	ALU_LIM_Y	34	4	nm	0	0	99999900		Permissible Y adjust	RO	RO	RO
4536	ALU_LIM_T	34	4	nm	0	0	99999900		Permissible θ adjust	RO	RO	RO
4537	IDX_CHK_X	34	4	chips	0	0	99		Index check: X position	RO	RO	RO
4538	IDX_CHK_Y	34	4	chips	0	0	99		Index check: Y position	RO	RO	RO
4539	IDX_PER_Y	34	4	nm	0	0	99999900		Index check: Permission	RO	RO	RO
4540	ALI_ESC_ADJ	20	4	N/A	YES	N/A	N/A	YES/NO	Escape data auto adjust	RO	RO	RO
4550-4554	ALU_Q_CH[0-4]	34	4	%	0	0	100	0: Macro 1–: Each channel	Q-level (by channel)	RO	RO	RO
4560-4564	HAIR_W_CH[0-4]	34	4	Pixel	0	0	512	0: Macro 1–: Each channel	Hairline width (by channel)	RO	RO	RO
4570-4574	ALU_ADJ_CH[0-4]	34	4	nm	0	0	999999900	0: Macro 1–: Each channel	Street adjustment (by channel)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
4580	FOCUS_TIME	20	n	N/A	Null	N/A	N/A	BY_DEVICE/MAC/MIC/ MAC_MIC/BY_POINT	Focus timing	RO	RO	RO
4581	FOCUS_MODE	20	n	N/A	Null	N/A	N/A	WORK/SHORT/FULL	Focus mode	RO	RO	RO
4582	FOCUS_STROK	34	4	nm	0	0	10000000		Focus stroke	RO	RO	RO
4583	FOCUS_STEP	34	4	nm	0	0	10000000		Focus step	RO	RO	RO
4584	FOCUS_DIS	34	4	nm	0	0	999900000		By point distance	RO	RO	RO
10020	ALI_FOCUS_POS	34	4	nm	0	-9999000	8000000		Focus pos.	RO	RO	RO
Alignment Special Data in Current Recipe												
4720	IDX_X_MAC	34	4	nm	0	0	999999900		Index X (Macro)	RO	RO	RO
4731-4734	IDX_X_CH[1-4]	34	4	nm	0	0	999999900		Index X (by channel)	RO	RO	RO
4740	IDX_Y_MAC	34	4	nm	0	0	999999900		Index Y (Macro)	RO	RO	RO
4751-4754	IDX_Y_CH[1-4]	34	4	nm	0	0	999999900		Index Y (by channel)	RO	RO	RO
4760	SWING_MAC	34	4	nm	0	0	999999900		θ adj. swing distance (Macro)	RO	RO	RO
4771-4774	SWING_CH[1-4]	34	4	nm	0	0	999999900		θ adj. swing distance (by channel)	RO	RO	RO
10021	TARGET_CH2	20	n	N/A	Null	N/A	N/A	CH1/*	Target select (CH2)	RO	RO	RO
4780	TARGET_CH3	20	n	N/A	Null	N/A	N/A	CH1/CH2/*	Target select (CH3)	RO	RO	RO
4781	TARGET_CH4	20	n	N/A	Null	N/A	N/A	CH1/CH2/*	Target select (CH4)	RO	RO	RO
4782	SPIRAL_A_X	34	4	nm	0	0	999999900		Macro spiral size X	RO	RO	RO
4783	SPIRAL_A_Y	34	4	nm	0	0	999999900		Macro spiral size Y	RO	RO	RO
4585	FOCUS_DIR	34	4	%	0	0	100		Auto focus light level (Dir)	RO	RO	RO
4586	FOCUS_OBL	34	4	%	0	0	100		Auto focus light level (Obl)	RO	RO	RO
4589	FOCUS_WX	34	4	Pixel	0	0	512		Auto focus area X	RO	RO	RO
4590	FOCUS_WY	34	4	Pixel	0	0	480		Auto focus area Y	RO	RO	RO
4784	KERF_C_ALI	20	n	N/A	NO	N/A	N/A	NO/Y_ADJ/T_ADJ	Kerf center alignment option	RO	RO	RO
4785	KERF_C_SIZE	34	4	nm	0	0	999999900		Recognition Y(+-)	RO	RO	RO
4786	KERF_W_SIZE	34	4	nm	0	0	999999900		Window size	RO	RO	RO
4787	KERF_C_DIR	34	4	%	0	0	100		Light level (Dir)	RO	RO	RO
4788	KERF_C_OBL	34	4	%	0	0	100		Light level (Obl)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
4789	FOCUS_K_WX	34	4	N/A	0	0	512		Auto focus area X	RO	RO	RO
4790	FOCUS_K_WY	34	4	N/A	0	0	480		Auto focus area Y	RO	RO	RO
Function Selection Data in Current Recipe												
4514	WATER_SPDX	34	4	nm/sec	60000000	10000000	600000000		Air curtain sweep speed			
4510	AUTODOWN_L	34	4	mm	0	0	99999999		Auto down Spec. length	RO	RO	RO
4512	AUTODOWN_Z	34	4	nm	0	0	40000000		Auto down Down length	RO	RO	RO
4524	SETUP_AUTO	20	n	N/A	NO	N/A	N/A	NO/YES/BEFORE	Auto setup	RO	RO	RO
4520	SETUP_LEN	34	4	m	0	0	99999999		Auto setup interval (length)	RO	RO	RO
4521	SETUP_COU	34	4	mm	0	0	99999		Auto setup interval (lines)	RO	RO	RO
10031	SLOWIN_TYPE	20	n	N/A	NO	N/A	N/A	NO/ACC/SPD	Slow in cut Type	RO	RO	RO
10041	SLOWIN_MODE	20	n	N/A	IN	N/A	N/A	IN/OUT/IN_OUT	Slow in cut Mode	RO	RO	RO
10051	SLOWIN_SPD	54	4	nm/sec	0	0	600000000		Slow in cut Speed	RO	RO	RO
10061	SLOWIN_LEN	54	4	nm	0	0	999999000		Slow in cut Length	RO	RO	RO
10070	SEL_CHOPER	20	n	N/A	NO	NO	YES	NO/YES	Chopper function	RO	RO	RO
10071	SEL_DEPSTEP	20	n	N/A	NO	NO	YES	NO/YES	Depth steps function	RO	RO	RO
10072	SEL_LOOP	20	n	N/A	NO	NO	YES	NO/YES	Loop function	RO	RO	RO
10073	SEL_OFFSET_X	20	n	N/A	NO	NO	YES	NO/YES	X-Axis offset function	RO	RO	RO
10074	SEL_OFFSET_T	20	n	N/A	NO	NO	YES	NO/YES	Theta-Axis Offset function	RO	RO	RO
10075	SEL_CHANNEL1	20	n	N/A	NO	NO	YES	NO/YES	One-channel display	RO	RO	RO
10076	CHOPPER_POS	20	n	N/A	CT_ CENTER	N/A	N/A	CT_CENTER/ALIGNMENT	Chopper cut X-axis standard position	RO	RO	RO
Process Control Data in Current Recipe												
4800-4815	PC_TABLE[0-15]	20	n	N/A	Null	N/A	N/A	ALI/CUT	Process ID	RO	RO	RO
4820-4835	PC_PARA[0-15]	20	n	N/A	Null	N/A	N/A		Parameter	RO	RO	RO
Kerf Check Data in Current Recipe												
4620	KC_WORK_NO	34	4	N/A	0	0	999		Check frequency (every): workpieces	RO	RO	RO
4591	KC_LINE_L	34	4	lines	0	0	9999		Check frequency (every): lines	RO	RO	RO
4601-4604	KC_LINE_M[1-4]	34	4	lines	0	0	9999		Check frequency within a wafer (lines): First (by channel)	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
4611-4614	KC_LINE_N[1-4]	34	4	lines	0	0	9999		Check frequency within a wafer (lines): Every (by channel)	RO	RO	RO
4621	KC_MODE	20	n	N/A	Null	N/A	N/A	OPERATOR/KERF/ TARGET/KERF_TARGET	Check mode	RO	RO	RO
4623	KC_WIDTH	34	4	N/A	1	1	9		Window width	RO	RO	RO
4624	KC_SENSE	34	4	N/A	0	0	3		Sensitivity	RO	RO	RO
4652	KC_RETRY	34	4	times	0	0	99		Retry times	RO	RO	RO
4653	KC_BLOW_TIM	34	4	sec	0	0	99		Air blow time	RO	RO	RO
4622	KC_OBJECT	20	n	N/A	Null	N/A	N/A	CENTER/UPPER/LOWER	Check object	RO	RO	RO
4654	KC_FOCUS	20	n	N/A	Null	N/A	N/A	YES/NO	Auto focus	RO	RO	RO
4655	KC_A_LIGHT	20	n	N/A	Null	N/A	N/A	YES/NO	Auto light (retry)	RO	RO	RO
4656	KC_DIR_CH1	34	4	%	0	0	100		Light level (Dir)	RO	RO	RO
4657	KC_OBL_CH1	34	4	%	0	0	100		Light level (Obl)	RO	RO	RO
4625	KC_PNT_LIM	34	4	nm	0	0	99		Kerf score	RO	RO	RO
4627	KC_PNT_ERR	20	n	N/A	Null	N/A	N/A	CALL/SKIP	Kerf score (Error countermeas.)	RO	RO	RO
4628	KC_OFF_LIM	34	4	nm	0	0	999999000		Off center (call)	RO	RO	RO
4630	KC_OFF_ADJ	34	4	nm	0	0	999999000		Off center (auto adjust)	RO	RO	RO
4632	KC_MAX_LIM	34	4	nm	0	0	999999000		Kerf width (without chipping) MAX	RO	RO	RO
4634	KC_MAX_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY	Kerf width (without chipping) MAX (Error countermeas.)	RO	RO	RO
4635	KC_MIN_LIM	34	4	nm	0	0	999999000		Kerf width (without chipping) MIN	RO	RO	RO
4637	KC_MIN_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY	Kerf width (without chipping) MIN (Error countermeas.)	RO	RO	RO
4638	KC_MAXX_LIM	34	4	nm	0	0	999999000		Kerf width (include chipping) MAX	RO	RO	RO
4640	KC_MAXX_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY	Kerf width (include chipping) MAX (Error countermeas.)	RO	RO	RO
4641	KC_HAF_LIM	34	4	nm	0	0	999999000		Kerf width (center - chipping) MAX	RO	RO	RO
4643	KC_HAF_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY	Kerf width (center - chipping) MAX (Error countermeas.)	RO	RO	RO
4644	KC_CHIP_LIM	34	4	nm	0	0	999999000		Chipping size	RO	RO	RO
4646	KC_CHIP_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY	Chipping size (Error countermeas.)	RO	RO	RO
4647	KC_AREA_LIM	34	4	N/A	0	0	9999999			RO	RO	RO
4649	KC_AREA_ERR	20	n	N/A	Null	N/A	N/A	CALL/PRECUT/RETRY		RO	RO	RO

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4650	KC_PER_Y	34	4	nm	0	0	999999000			RO	RO	RO
4651	KC_CUT_DEP	34	4	N/A	0	0	10000000			RO	RO	RO
Kerf Check Special Data in Current Recipe												
4658	KC_SPECIAL	20	n	N/A	Null	N/A	N/A	YES/NO	Special data	RO	RO	RO
4667	KC_Z1_POSM	34	4	nm	0	-1000000	10000000		Focus point (- for upper)	RO	RO	RO
4680-4683	KC_DIR_Z1[0-3]	34	4	%	0	0	100	0=CH1	Light level (by channel) (Dir)	RO	RO	RO
4690-4693	KC_OBL_Z1[0-3]	34	4	%	0	0	100	0=CH1	Light level (by channel) (Obl)	RO	RO	RO
4660	KC_VE_WIDTH	34	4	nm	0	0	1000000		Bevel cut Kerf width	RO	RO	RO
4661	KC_VE_ADJZ	34	4	nm	0	0	10000000		Bevel cut Adjusted (Z-axis)	RO	RO	RO
4662	KC_VE_ADJW	34	4	nm	0	0	10000000		Bevel cut Adjusted (Width)	RO	RO	RO
Blade Change Data												
4920	UNIT_BLD	20	n	N/A	Null	N/A	N/A	MM/INCH	Unit	RO	RO	RO
4922	BLADE_LOT	20	n	N/A	Null	N/A	N/A		Lot ID	RO	RO	RO
4924	BLADE_ID	20	n	N/A	Null	N/A	N/A		Spec.	RO	RO	RO
4926	XCHG_REASON	10	1	N/A	0	0	9		Replacement reason	RO	RO	RO
4928	BLD_OLD_NEW	20	n	N/A	Null	N/A	N/A	OLD_NEW	New/Used	RO	RO	RO
4930	BLADE_DIA	54	4	nm	47000000	150000000	762000000		Blade O.D.	RO	RO	RO
4932	BLADE_THICK	54	4	nm	55000	0	1020000		Blade thickness	RO	RO	RO
4934	BLADE_COU	20	n	lines	0	0	99999999		Blade life (lines)	RO	RO	RO
4936	BLADE_LEN	54	4	mm	0	0	99999999		Blade life (m)	RO	RO	RO
4938	BLADE_TYPE	20	n	N/A	Null	N/A	N/A	1=Hub type 2=Flange type	Blade type 1: HUB 2: HUBLESS	RO	RO	RO
4940	HAB_TIP	54	4	nm	800000	0	999999000		Hub exposure	RO	RO	RO
4942	FLANGE_DIA	54	4	nm	0	0	5080000		Flange O.D.	RO	RO	RO
Setup Data												
4950	UNIT_SET	20	n	N/A	MM	N/A	N/A	MM/INCH	Unit	RO	RO	RO
4951	CT_SIZE	54	4	Inch	8	N/A	N/A	8/12	Chuck table size	RO	RO	RO
4952	SETUP_LIM_L	54	4	nm	100000	0	999999		Blade wear check (Excessive wear)	RO	RO	RO
4954	SETUP_LIM_G	54	4	nm	10000	0	999999		Blade wear check (Insufficient wear)	RO	RO	RO
4963	UNSET_LIM	54	4	nm	5000	0	999999000		Permissible amount (Non Contact)	RO	RO	RO

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4964	CT_LIM	54	4	nm	0	0	999999000		Permissible amount (C/T)	RO	RO	RO
4966	BLADE_BLOW	54	4	sec	10	0	999		Blade blow time (C/T)	RO	RO	RO
4967	BLADE_BLOWN	54	4	sec	0	0	999		Blade blow time (Non Contact)	RO	RO	RO
4980	T_SHAPE	20	n	N/A	ROUND	N/A	N/A	ROUND/SQUARE	Chuck table shape	RO	RO	RO
4962	SETUPT_U	20	n	N/A	NON CONTACT	N/A	N/A	NONCONTACT/CONTACT	Setup default	RO	RO	RO
4958	SETUP_MODE	20	n	N/A	AUTO	N/A	N/A	AUTO/CALL/NO	Call operator When auto setup	RO	RO	RO
4959	PRE_CUT_UN	20	n	N/A	NO	N/A	N/A	NO/YES	Precut after Non Contact setup	RO	RO	RO
4956	SETUP_RETRY	54	4	N/A	0	0	999		Retry (for auto setup)	RO	RO	RO
4957	SETUP_RTY2	54	4	N/A	0	0	999		C/T setup check	RO	RO	RO
4965	BLADE_SAFE	54	4	nm	50000	0	999999000		Clearance between flange and work surface	RO	RO	RO
4968	UNSET_BWAIT	54	4	sec	2	1	999		Waiting time after Non Contact setup air blow	RO	RO	RO
4969	NCS_BLOW	54	4	sec	2	1	999		Blow time at NCS block	RO	RO	RO
4970	DOWN_SPDZ	54	4	nm/sec	10000000	100000	50000000		Setup high speed (Non Contact)	RO	RO	RO
4971	DOWN_SPDZ2	54	4	nm/sec	10000000	100000	50000000		Setup high speed (C/T)	RO	RO	RO
4972	SETUP_SPDZ	54	4	nm/sec	10000000	100000	50000000		Setup low speed (Non Contact)	RO	RO	RO
4973	SETUP_SPDZ2	54	4	nm/sec	10000000	100000	50000000		Setup low speed (C/T)	RO	RO	RO
4974	SETUP_SAFE	54	4	nm	3000000	1000000	60000000		Setup low speed stroke (Non Contact)	RO	RO	RO
4975	SETUP_SAFE2	54	4	nm	3000000	1000000	60000000		Setup low speed stroke (C/T)	RO	RO	RO
4976	SETUP_IDXT	54	4	10-6 deg	1000000	0	190000000		θ-rotation for contact setup	RO	RO	RO
4977	SETUP_POSTS	54	4	10-6 deg	10000000	5000000	290000000		θ-rotation for start position	RO	RO	RO
4978	SETUP_POSTE	54	4	10-6 deg	250000000	5000000	290000000		θ-rotation for end position	RO	RO	RO
4979	SETUP_CNT	54	4	N/A	0	0	9999		θ-rotation for now position	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
Setup Area Data												
5620	SELECT_BAR	54	4	N/A	1	1	5		Area No. Select	RO	RO	RO
5621	BAR_ROOM_X	54	4	nm	0	0	99999000		Room width (RX) X	RO	RO	RO
5622	BAR_ROOM_Y	54	4	nm	0	0	99999000		Room width (RX) Y	RO	RO	RO
5623	BAR_PITCHX	54	4	nm	0	0	99999000		Motion pitch (PX) X	RO	RO	RO
5624	BAR_PITCHY	54	4	nm	0	0	99999000		Motion pitch (PX) Y	RO	RO	RO
5625-5629	BAR_SIZE_X[0-4]	54	4	nm	0	0	999999000		Size X (by Area No.)	RO	RO	RO
5630-5634	BAR_SIZE_Y[0-4]	54	4	nm	0	0	999999000		Size Y (by Area No.)	RO	RO	RO
5635-5639	BAR_START_X[0-4]	34	4	nm	0	-999999000	999999000		Setup start pos. X (by Area No.)	RO	RO	RO
5640-5644	BAR_START_Y[0-4]	34	4	nm	0	-999999000	999999000		Setup start pos. Y (by Area No.)	RO	RO	RO
5655-5659	BAR_END_X[0-4]	34	4	nm	0	-999999000	999999000		Setup end pos. X (by Area No.)	RO	RO	RO
5660-5664	BAR_END_Y[0-4]	34	4	nm	0	-999999000	999999000		Setup end pos. Y (by Area No.)	RO	RO	RO
5665-5669	BAR_T[0-4]	34	4	10-6 deg	0	-999999000	999999000		θ pos. (by Area No.)	RO	RO	RO
5670-5674	BAR_ADJ[0-4]	34	4	nm	0	-999999000	999999000		Height offset (by Area No.)	RO	RO	RO
Function Data												
5000	KERFC_NEXT	20	n	N/A	NO	N/A	N/A	NO/YES	After kerf check	RO	RO	RO
5001	OIL_PASS	20	n	N/A	NO	N/A	N/A	NO/YES	Axis maintenance	RO	RO	RO
5002	KC_ERR_PASS	20	n	N/A	NO	N/A	N/A	NO/YES	Keep work wet	RO	RO	RO
5003	SPNDL_IDLE	54	4	min	0	0	99		Spindle idling time	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
ECID	ECNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	Other than IDLE, READY	Remote	Local
Operation Data												
5500	SCAN_SPDX	34	4	nm/sec	30000000	0	600000000		Scan speed X-axis	RO	RO	RO
5501	SCAN_SPDY	34	4	nm/sec	10000000	0	200000000		Scan speed Y-axis	RO	RO	RO
5502	SCAN_SPDT	34	4	nm/sec	60000000	0	180000000		Scan speed θ-axis	RO	RO	RO
5503	SCAN_SLOW	34	4	nm/sec	5	1	300		Scan move time (Low speed)	RO	RO	RO
5504	SCAN_MID	34	4	nm/sec	2	1	300		Scan move time (Hi speed)	RO	RO	RO
5505	BLADE_ESC	34	4	nm	500000	0	20000000		Escape rate	RO	RO	RO
5507	EXTRA_ESC	34	4	nm	2000000	0	20000000		Extra escape rate	RO	RO	RO
5509	EM_CUT_MODE	20	n	N/A	NEXT	N/A	N/A	NEXT/SAME	Cut sequence after Z-EM	RO	RO	RO
5510	ROOM_X	34	4	nm	6000000	-99999000	99999000		Clearance X-axis (Start)	RO	RO	RO
5514	ROOM_X_END	34	4	nm	6000000	-99999000	99999000		Clearance X-axis (End)	RO	RO	RO
5511	ROOM_Y	34	4	nm	2000000	-99999000	99999000		Clearance Y-axis	RO	RO	RO
5512	WORK_LIM	34	4	nm	0	-99999000	99999000		Thickness check by focus limit	RO	RO	RO
5513	CUR_STROK	34	4	nm	276000000	0	999999000		Air curtain stroke	RO	RO	RO
Status Indicator Data												
5100-5109	IDLE[0-9]	54	4	N/A	0	0	6	0=OFF 1=ON 2=200ms Flash 3=500ms Flash 4=1sec Flash 5=2sec Flash 6=PAT_SPEED	Idle 0: BUZZER1 1: RED 2: YELLOW 3: GREEN 4: OPTION 5: OPTION2 6: BUZZER2	RO	RO	RO
5110-5119	ALARM[0-9]	54	4	N/A	0	0	6		Error	RO	RO	RO
5120-5129	AUTO[0-9]	54	4	N/A	0	0	6		Manual cut	RO	RO	RO
5130-5139	AUTO1[0-9]	54	4	N/A	0	0	6		Manual alignment	RO	RO	RO
5140-5149	FULLAUTO[0-9]	54	4	N/A	0	0	6		Full auto	RO	RO	RO
5150-5159	WAIT[0-9]	54	4	N/A	0	0	6		Cutting pause	RO	RO	RO
5160-5169	MANUAL[0-9]	54	4	N/A	0	0	6		Other operations	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
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5190-5199	CALL2[0-9]	54	4	N/A	0	0	6		Complete of process	RO	RO	RO
5200-5209	CALL0[0-9]	54	4	N/A	0	0	6		Operator call	RO	RO	RO
5210-5219	USER[0-9]	54	4	N/A	0	0	6		User defined	RO	RO	RO
5220	PAT_SPEED	54	4	ms	1000	0	9999		Periodic flashing	RO	RO	RO
Alignment Data												
5400	LIGHT_DIR	34	4	%	0	-50	50		Adjustment light level (Dir)	RO	RO	RO
5401	LIGHT_OBL	34	4	%	0	-50	50		Adjustment light level (Obl)	RO	RO	RO
5403	ALU_PIX_HI	34	4	nm	1000	0	100000		Pixel size (Hi mag.)	RO	RO	RO
5404	ALU_PIX_LO	34	4	nm	10000	0	100000		Pixel size (Lo mag.)	RO	RO	RO
5405	ALU_MAG_HI	34	4	N/A	7500	0	20000		Microscope magnification (CCD) (Hi mag.)	RO	RO	RO
5406	ALU_MAG_LO	34	4	N/A	750	0	20000		Microscope magnification (CCD) (Lo mag.)	RO	RO	RO
5407	CCD_SIZE_HI	34	4	nm	7500	0	99999		CCD size (Hi mag.)	RO	RO	RO
5408	CCD_SIZE_LO	34	4	nm	7500	0	99999		CCD size (Lo mag.)	RO	RO	RO
5414	ALU_CX_HI	34	4	nm	0	N/A	N/A		Microscope center position (Hi X)	RO	RO	RO
5415	ALU_CY_HI	34	4	nm	0	N/A	N/A		Microscope center position (Hi Y)	RO	RO	RO
5416	ALU_CX_LO	34	4	nm	0	N/A	N/A		Microscope center position (Lo X)	RO	RO	RO
5417	ALU_CY_LO	34	4	nm	0	N/A	N/A		Microscope center position (Lo Y)	RO	RO	RO
5418	ANGLE_PER	34	4	10-6 deg	50000	0	99999000		θ Permission CH to CH	RO	RO	RO
5402	FOCUS_LONG	34	4	nm	1000000	0	10000000		Auto focus stroke by button	RO	RO	RO
5409	ALU_WAIT	34	4	ms	180	0	1000		ALU waiting time	RO	RO	RO
5410	ALU_Q_MAGIN	34	4	%	20	0	100		Spiral check Q margin	RO	RO	RO
5412	KC_NEXT_RET	34	4	times	0	0	999		Kerf check by target retry	RO	RO	RO
5413	KC_NEXT_LIN	34	4	lines	0	0	999		Kerf check by target retry line	RO	RO	RO

		ECVAL Data Definition								Host Access Accepted		
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Water Program Data												
5030-5032	WATER_IDLE[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Idling 0: Cut water 1: Air curtain 2: Water curtain	RO	RO	RO
5050-5052	WATER_ALI[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Align	RO	RO	RO
5060-5062	WATER_CUT[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Cut	RO	RO	RO
5070-5072	WATER_PAUSE[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Cut_pause	RO	RO	RO
5080-5082	WATER_KERFC[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Kerf_check	RO	RO	RO
5090-5092	WATER_TOCLN[0-2]	20	n	N/A	Null	N/A	N/A	ON/OFF	Cutting finish	RO	RO	RO
PreCut Data												
5520	PSPEC_NO	20	n	N/A	N/A	N/A	N/A		Precut process No.	RO	RO	RO
5521	PRE_ID	20	n	N/A	N/A	N/A	N/A		ID	RO	RO	RO
5522	PSPEC_OLD	34	4	N/A	5	1	30		Old blade initial feed speed	RO	RO	RO
5523	PSPEC_NEW	34	4	N/A	1	1	30		New blade initial feed speed	RO	RO	RO
5524	PSPEC_RET	34	4	N/A	1	1	30		Precut set during precut: decrease	RO	RO	RO
5525	PSPEC_DEP	34	4	nm	0	0	1000000		Set for work thickness greater	RO	RO	RO
5526	PSPEC_MODE	20	n	N/A	N/A	N/A	N/A		Precut mode	RO	RO	RO
5530-5559	PD_LIN[0-29]	34	4	line	0	0	999		# of lines	RO	RO	RO
5560-5589	PD_LEN[0-29]	34	4	mm	0	0	99999		length	RO	RO	RO
5590-5619	PD_SPD[0-29]	34	4	nm/sec	0	0	600000000		Feed spd	RO	RO	RO

9-3. List of Discrete Variables (DV)

DVID

		DVVAL Data Definition								Host Access Accepted		
DVID	DVNAME	Format	Bytes	Unit	Default	Min	Max	Values	Comment	In Process	Remote	Local
7001	PPORGNAME	20	≦80	N/A	N/A	N/A	N/A		Deleted, modified, or selected PPNAME. PPNAME before the name is changed.	RO	RO	RO
7002	PPNEWNAME	20	≦80	N/A	N/A	N/A	N/A		PPNAME after the name is created or modified.	RO	RO	RO
7003	EventLimit	54	4	N/A	N/A	N/A	N/A	<Limit monitoring>		RO	RO	RO
7004	LimitVariable	54	4	N/A	N/A	N/A	N/A	<Limit monitoring>		RO	RO	RO
7005	TransitionType	10	1	N/A	0	0	1	<Limit width transit direction> 0=Downward 1=Upward		RO	RO	RO
7010	AlarmsSet	0,54	n	N/A	N/A	N/A	N/A			RO	RO	RO
7011	AlarmID	54	4	N/A	N/A	N/A	N/A		Alarm ID	RO	RO	RO
7012	ALID	54	4	N/A	N/A	N/A	N/A		Alarm ID	RO	RO	RO
7013	ALCD	10	1	N/A	N/A	N/A	N/A		Alarm code	RO	RO	RO
7014	ALTX	20	n	N/A	N/A	N/A	N/A		Alarm text	RO	RO	RO
7100	PortID	51	1	N/A	N/A	N/A	N/A		Processed PortID	RO	RO	RO
7101	CarrierID	20	≦16	N/A	Null	N/A	N/A		Processed Carrier_ID			
7102	LocationID	20	n	N/A	N/A	N/A	N/A		Processed LocationID	RO	RO	RO
7103	SlotMap	10	25	N/A	N/A	N/A	N/A		SlotMap of processed Port			
7104	AccessMode	10	1	N/A	0	0	1	0=MANUAL 1=AUTO		RO	RO	RO
7105	Reason	10	1	N/A	N/A			1=VERIFICATION NEEDED 2=VERIFICATION BY EQUIPMENT UNSUCCESSFUL 3=READ FAIL 4=IMPROPER WAFER POSITION		RO	RO	RO
7106	E87State	10	1	N/A	N/A	N/A	N/A		Changed status used in E87.			
7020	GEM_CEID	54	4	N/A	N/A	N/A	N/A		Last sent CEID.	RO	RO	RO
9999												

10. Event List

Summary of this section

This section explains the events occurred in this equipment.

Section No.	Title
10-1	Event (CEID) List

10-1. Event (CEID) List

CEID

EVENT ITEM LIST FILE			
CEID	Enable/Disable	Event Name	Comment
0	D	Reserved	
1	D	Cut Start	
2	D	Cut End	
3	D	PreCut Start	
4	D	PreCut End	
5	D	Alignment Start	
6	D	Alignment End	
7	D	Kerf Check Start	
8	D	Kerf Check End	
9	D	Reserved	
10	D	Reserved	
11	D	Setup Start	
12	D	Setup End	
13	D	Blade Change Start	
14	D	Blade Change End	
15	D	Blade Dress Start	
16	D	Blade Dress End	
17-24	D	Reserved	
25	D	System initialize Start	Press <SYS INI>
26	D	System initialize End	System has been initialized
27-36	D	Reserved	
37	D	CT Process Completed	
38-39	D	Reserved	
40	D	Reserved	
41	D	Full automation initialize start	<F1>:dicing device
42	D	Full automation initialize end	System was initialize for full automation
43	D	Full automation start	Press <START>
44	D	Full automation end	
45	D	Full automation pause/stop	Press <STOP> while full automation is processing
46	D	Full automation restart	Press<START> while full automation is pause
47-70	D	Reserved	
71	D	Host message recognize	Operator recognized the arrived host message
72	D	Process program change	
73	D	Process program(s) selected	
74	D	OFF-LINE state transition	ON-LINE-> OFF-LINE
75	D	LOCAL substate transition	REMOTE -> LOCAL OFF-LINE -> ON-LINE/LOCAL
76	D	REMOTE substate transition	LOCAL -> REMOTE OFF-LINE -> ON-LINE/REMOTE
77	D	NEUTRAL state transition	Other state -> NEUTRAL

EVENT ITEM LIST FILE			
CEID	Enable/Disable	Event Name	Comment
78	D	FULLAUTO state transition	Other state -> FULLAUTO Same timing as full automation start
79	D	MANUAL state transition	Other state -> MANUAL
80-120	D	Reserved	
121	D	Process program created	
122	D	Process program rename	
123	D	Process program deleted	
124-149	D	Reserved	
150	D	Process State Change	
151	D	FrameTransfer SubProcess State change	
152	D	CT SubProcess State Change	
153-169	D	Reserved	
170	D	SpoolingActivated	
171	D	SpoolingDeactivated	
172	D	SpoolTransmitFailuer	
173-255	D	Reserved	
*1	D	Alarm set	
*2	D	Alarm clear	
*3	D	Limit Monitoring	

*1: CEID for Alarm set uses AlarmID + 0x10000000.

*2: CEID for Alarm release uses AlarmID + 0x20000000.

*3: CEID for Limit Monitoring uses SVID + 0x30000000 to monitor.

11. Alarm List

Summary of this section

This section describes the alarms that occur in this machine.

Section No.	Title
11-1	Alarm List

11-1. Alarm List

Outline

The alarm file format of the DAD3000 series is described below.

ALCD

The definition is as shown below.

0	Not used
1	Safety (personnel)
2	Safety (equipment)
3	Parameter control warning
4	Parameter control error
5	Irrecoverable error
6	Equipment status warning
7	Attention flags
8	Data integrity
>8	Other category
9-63	Reserved

ALID

The alarm identifiers are used alarm classification below in format on this equipment.

[Alarm classification]

SECS/GEM ALID	ALID	ALARM CLASSIFICATION
24000+nnnn	Xnnnn	Axis
1000+nnnn	Annnn	Alignment
11000+nnnn	Knnnn	Kerf check
22000+nnnn	Vnnnn	Valve
18000+nnnn	Rnnnn	Loading arm
14000+nnnn	Nnnnn	Cassette
21000+nnnn	Unnnn	Utility (e.g water)
2000+nnnn	Bnnnn	Blade
15000+nnnn	Onnnn	Others
5000+nnnn	Ennnn	Emergency

nnnn: 0000 - 9999 ascii value

ALID	ALTX		ALCD
5000	E0000		6
5001	E0001	Turn power off.	6
5002	E0002	EMO switch pressed.	6
5003	E0003	Insufficient main air.....Reinitialize.	6
5004	E0004	Spindle inverter error. Re-start the machine.	6
5005	E0005		6
5006	E0006		6
5007	E0007	UPS has been actuated.	6
5008	E0008	ZEM is activated.	6
5009	E0009	Initialize.	6
24010	X0010	Y-axis scale error.....Reinitialize.	6
5011	E0011	Spindle overheat error.	2
5012	E0012	Splash cover opened.	1
24013	X0013	X-axis servo error.....Turn power off.	5
5014	E0014	Temperature in the electrical box has increased.	2
5015	E0015	Water case overflow error.	2
5016	E0016	Drain tank overflow error.	2
5017	E0017	Cutting water flow error.	2
5018	E0018	Spindle cooling water flow error.	2
5019	E0019	Insufficient N2 pressure.	2
5020	E0020	Handling cover sensor error.	1
5021	E0021	Elevator cover open error.	1
5022	E0022	Insufficient sub air.	2
2023	B0023	Spindle continuity error.	6
2024	B0024	Non-Contact Setup check error.	6
2025	B0025	Calibrate sensor.	6
2026	B0026	Setup error (error detection.)	6
2027	B0027	Setup error (Z-axis position error.)	6
2028	B0028	Setup error (No detection.)	6
2029	B0029	Large difference between first and second Non-Contact Setup.	6
2030	B0030	Blade wear check error.	6
2031	B0031	Setup data error.	6
2032	B0032	Blade exposure limit. Change blade.	6
2033	B0033	Blade life limit reached. Replace blade.	6
22034	V0034	Spindle error.	6
22035	V0035	Cut data is invalid.	4
5036	E0036	Cut area is out of range.	4
2037	B0037	B.B.D. blade detective error.	6
11038	K0038	Kerf check: Not found.	A
11039	K0039	Kerf check: Off center.	A
11040	K0040	Kerf check: Too wide.	A
11041	K0041	Kerf check: Too narrow.	A
11042	K0042	Kerf check: Chipping size.	A
11043	K0043	Kerf check: Chipping area.	A
11044	K0044	Kerf check: Target not found.	A
11045	K0045	Kerf check: Target position error.	A
11046	K0046	Kerf check: Too wide. (Center to Chipping)	A
11047	K0047	Kerf check: Too wide. (Include chipping)	A
11048	K0048	Could not find kerf center.	A
11049	K0049	Kerf center position error.	A
24050	X0050	X-axis unrecoverable error. Re-start the machine.	6
24051	X0051	X-axis unknown error.....Reinitialize.	6

ALID	ALTX		ALCD
24052	X0052	X-axis servo error. Re-start the machine.	6
24053	X0053	X-axis CW end error.....Reinitialize.	6
24054	X0054	X-axis CCW end error.....Reinitialize.	6
24055	X0055	X-axis vibration error(near).....Reinitialize.	6
24056	X0056	X-axis vibration error(far).....Reinitialize.	6
24057	X0057	X-axis position error.....Reinitialize.	6
24058	X0058	X-axis scale retry error.....Reinitialize.	6
24059	X0059	X-axis parameter error.....Reinitialize.	6
24060	X0060	Y-axis unrecoverable error. Re-start the machine.	6
24061	X0061	Y-axis unknown error.....Reinitialize.	6
24062	X0062	Y-axis servo error. Re-start the machine.	6
24063	X0063	Y-axis CW end error.....Reinitialize.	6
24064	X0064	Y-axis CCW end error.....Reinitialize.	6
24065	X0065	Y-axis vibration error(near).	6
24066	X0066	Y-axis vibration error(far).	6
24067	X0067	Y-axis position error.....Reinitialize.	6
24068	X0068	Y-axis scale retry error.	6
24069	X0069	Y-axis parameter error.....Reinitialize.	6
24070	X0070	Z-axis unrecoverable error. Re-start the machine.	6
24071	X0071	Z-axis unknown error.....Reinitialize.	6
24072	X0072	Z-axis servo error. Re-start the machine.	6
24073	X0073	Z-axis CW end error.....Reinitialize.	6
24074	X0074	Z-axis CCW end error.....Reinitialize.	6
24075	X0075	Z-axis vibration error(near).....Reinitialize.	6
24076	X0076	Z-axis vibration error(far).....Reinitialize.	6
24077	X0077	Z-axis position error.....Reinitialize.	6
24078	X0078	Z-axis scale retry error.....Reinitialize.	6
24079	X0079	Z-axis parameter error.....Reinitialize.	6
24080	X0080	Theta-axis unrecoverable error. Re-start the machine.	6
24081	X0081	Theta-axis unknown error.....Reinitialize.	6
24082	X0082	Theta-axis servo error. Re-start the machine.	6
24083	X0083	Theta-axis CW end error.....Reinitialize.	6
24084	X0084	Theta-axis CCW end error.....Reinitialize.	6
24085	X0085	Theta-axis vibration error.	6
24086	X0086	Theta-axis vibration error(far).....Reinitialize.	6
24087	X0087	Theta-axis position error.....Reinitialize.	6
24088	X0088	Theta-axis scale retry error.....Reinitialize.	6
24089	X0089	Theta-axis parameter error.....Reinitialize.	6
24090	X0090	Rotary Arm-axis unrecoverable error. Re-start the machine.	6
24091	X0091	Rotary Arm-axis unknown error.	6
24092	X0092	Rotary Arm-axis servo error. Re-start the machine.	6
24093	X0093	Rotary Arm-axis CW end error.	6
24094	X0094	Rotary Arm-axis CCW end error.	6
24095	X0095	Rotary Arm-axis vibration error(near).	6
24096	X0096	Rotary Arm-axis vibration error(far).	6
24097	X0097	Rotary Arm-axis position error.	6
24098	X0098	Rotary Arm-axis scale retry error.	6
24099	X0099	Rotary Arm-axis parameter error.	6
24100	X0100	Spinner-axis unrecoverable error. Re-start the machine.	6
24101	X0101	Spinner-axis unknown error.	6
24102	X0102	Spinner-axis servo error. Re-start the machine.	6
24103	X0103	Spinner-axis CW end error.	6

ALID	ALTX		ALCD
24104	X0104	Spinner-axis CCW end error.	6
24105	X0105	Spinner-axis vibration error(near).	6
24106	X0106	Spinner-axis vibration error(far).	6
24107	X0107	Spinner-axis position error.	6
24108	X0108	Spinner-axis scale retry error.	6
24109	X0109	Spinner-axis parameter error.	6
24110	X0110	Nozzle-axis unrecoverable error. Re-start the machine.	6
24111	X0111	Nozzle-axis unknown error.	6
24112	X0112	Nozzle-axis servo error. Re-start the machine.	6
24113	X0113	Nozzle-axis CW end error.	6
24114	X0114	Nozzle-axis CCW end error.	6
24115	X0115	Nozzle-axis vibration error(near).	6
24116	X0116	Nozzle-axis vibration error(far).	6
24117	X0117	Nozzle-axis position error.	6
24118	X0118	Nozzle-axis scale retry error.	6
24119	X0119	Nozzle-axis parameter error.	6
24120	X0120	Push pull-axis unrecoverable error. Re-start the machine.	6
24121	X0121	Push pull-axis unknown error.	6
24122	X0122	Push pull-axis servo error.	6
24123	X0123	Push pull-axis CW end error.	6
24124	X0124	Push pull-axis CCW end error.	6
24125	X0125	Push pull-axis vibration error(near).	6
24126	X0126	Push pull-axis vibration error(far).	6
24127	X0127	Push pull-axis position error.	6
24128	X0128	Push pull-axis scale retry error.	6
24129	X0129	Push pull-axis parameter error.	6
24130	X0130	Elevator-axis unrecoverable error. Re-start the machine.	6
24131	X0131	Elevator-axis unknown error.	6
24132	X0132	Elevator-axis servo error. Re-start the machine.	6
24133	X0133	Elevator-axis CW end error.	6
24134	X0134	Elevator-axis CCW end error.	6
24135	X0135	Elevator-axis vibration error(near).	6
24136	X0136	Elevator-axis vibration error(far).	6
24137	X0137	Elevator-axis position error.	6
24138	X0138	Elevator-axis scale retry error.	6
24139	X0139	Elevator-axis parameter error.	6
24140	X0140	Frame Centering-axis unrecoverable error. Re-start the machine.	6
24141	X0141	Frame centering-axis unknown error.....Reinitialize.	6
24142	X0142	Frame centering-axis servo error. Re-start the machine.	6
24143	X0143	Frame centering-axis CW end error.....Reinitialize.	6
24144	X0144	Frame centering-axis CCW end error.....Reinitialize.	6
24145	X0145	Frame centering-axis vibration error(near).....Reinitialize.	6
24146	X0146	Frame centering-axis vibration error(far).....Reinitialize.	6
24147	X0147	Frame centering-axis position error.....Reinitialize.	6
24148	X0148	Frame centering-axis scale retry error.....Reinitialize.	6
24149	X0149	Frame centering-axis parameter error.....Reinitialize.	6
24150	X0150	Y2-axis unrecoverable error. Re-start the machine.	6
24151	X0151	Y2-axis unknown error.....Reinitialize.	6
24152	X0152	Y2-axis servo error. Re-start the machine.	6
24153	X0153	Y2-axis CW end error.....Reinitialize.	6
24154	X0154	Y2-axis CCW end error.....Reinitialize.	6
24155	X0155	Y2-axis vibration error(near).	6

ALID	ALTX		ALCD
24156	X0156	Y2-axis vibration error(far).	6
24157	X0157	Y2-axis position error.....Reinitialize.	6
24158	X0158	Y2-axis scale retry error.	6
24159	X0159	Y2-axis parameter error.....Reinitialize.	6
24160	X0160	Z2-axis unrecoverable error. Re-start the machine.	6
24161	X0161	Z2-axis unknown error.....Reinitialize.	6
24162	X0162	Z2-axis servo error. Re-start the machine.	6
24163	X0163	Z2-axis CW end error.....Reinitialize.	6
24164	X0164	Z2-axis CCW end error.....Reinitialize.	6
24165	X0165	Z2-axis vibration error(near).....Reinitialize.	6
24166	X0166	Z2-axis vibration error(far).....Reinitialize.	6
24167	X0167	Z2-axis position error.....Reinitialize.	6
24168	X0168	Z2-axis scale retry error.....Reinitialize.	6
24169	X0169	Z2-axis parameter error.....Reinitialize.	6
5170	E0170	Wheel cover opened.	1
1171	A0171	Theta-axis alignment exceed set angle.	4
2172	B0172	Incorrect blade O.D.	6
2173	B0173	Blade life limit reached. Change blade.	6
5174	E0174	Microscope cover open error.	6
5175	E0175	Process program error. Re-initialize system.	6
5176	E0176	Cover open error.	6
5177	E0177	Last theta-axis position reached during setup.	6
2178	B0178	Change blade.	6
5179	E0179	X-axis overheat error.	2
5180	E0180	Theta-axis overheat error.	2
5181	E0181	Temperature Control Unit error.	2
2182	B0182	Perform contact setup.	6
2183	B0183	Blade has worn down. Readjust BBD sensor.	6
2184	B0184	BBD blade detection error. (Partial blade breakage)	6
2185	B0185	BBD blade detection error. (Total blade breakage)	6
22186	V0186	Unable to lock cover.	6
5187	E0187	Cutting water flow error.(Blade)	2
5188	E0188	Cutting water flow error. (Shower)	2
22189	V0189	Spindle rpm error.	6
5190	E0190	Water leakage detected. (X axis)	6
5191	E0191	Internal communication error.	6
5192	E0192	Facility drain error.	6
22193	V0193	Workpiece vacuum error.	6
2500	B0500	BBD blade detection error (Z1).	6
2501	B0501	BBD blade detection error (Z2).	6
22502	V0502	No workpiece in cassette.	7
22503	V0503	Finger clamp error.	6
22504	V0504	Rotary Arm up error.	6
22505	V0505	Rotary Arm down error.	6
22506	V0506	Rotary Arm vacuum error.	6
22507	V0507	Linear Arm up error.	6
22508	V0508	Linear Arm down error.	6
22509	V0509	Linear Arm vacuum error.	6
22510	V0510	Linear Arm front end error.	6
22511	V0511	Linear Arm rear end error.	6
22512	V0512	Workpiece vacuum error.	6
22513	V0513	Spinner table vacuum error.	6

ALID	ALTX		ALCD
22514	V0514	Spinner table up error.	6
22515	V0515	Spinner table down error.	6
15516	O0516	Workpiece in cassette.	7
22517	V0517	Spindle rpm error.	6
15518	O0518	Cassette switch turned OFF.	6
15519	O0519	Remove workpiece from W/T.	7
15520	O0520	Remove workpiece from C/T.	7
15521	O0521	Remove workpiece from Rotary Arm.	7
15522	O0522	Remove workpiece from S/T.	7
15523	O0523	Remove workpiece from Linear Arm.	7
15524	O0524	No workpiece at W/T.	7
15525	O0525	Frame is slanted.	7
22526	V0526	UV Arm front end error.	6
22527	V0527	UV Arm rear end error.	6
22528	V0528	UV Arm up error.	6
22529	V0529	UV Arm down error.	6
22530	V0530	UV Arm vacuum error.	6
1531	A0531	Macro target not found.	9
1532	A0532	Micro target not found.	9
1533	A0533	Alignment time limit.	9
1534	A0534	Index check target not found.	9
1535	A0535	Index check Y position error.(Y)	9
1536	A0536	Index check X position error.(X)	9
1537	A0537	Angle between channels error.	9
1538	A0538	Theta adjustment retry repeat error.	9
1539	A0539	This workpiece has already been cut.	9
1540	A0540	Workpiece size is incorrect.	9
1541	A0541	Angle recognition: Slice error.	9
1542	A0542	Angle recognition: Chip number not sufficient.	9
1543	A0543	Angle recognition: Retry error.	9
1544	A0544	Index check Y position error (Y).	9
1545	A0545	Least-square method theta adjustment limit error.	9
1546	A0546	Alignment.	9
1547	A0547	Shape recognition: Slice error.	9
1548	A0548	Alignment.	9
1549	A0549	Alignment.	9
1550	A0550	Alignment.	9
1551	A0551	Workpiece thickness is different from Device Data.	4
1552	A0552	Focus maintenance has not been performed.	7
5553	E0553	Work changer main air is insufficient.	2
5554	E0554	Z1-axis cutting water flow error.	6
5555	E0555	Z2-axis cutting water flow error.	6
5556	E0556	Z1-axis spindle cooling water flow error.	6
5557	E0557	Z2-axis spindle cooling water flow error.	6
5558	E0558	Z1-axis spindle inverter error. Re-start the machine.	6
5559	E0559	Z2-axis spindle inverter error. Re-start the machine.	6
5560	E0560	Z1-axis spindle overheat error.	6
5561	E0561	Z2-axis spindle overheat error.	6
2562	B0562	Z1-axis blade exposure limit reached. Change blade.	6
2563	B0563	Z2-axis blade exposure limit reached. Change blade.	6
2564	B0564	Z1-axis blade life limit.	6
2565	B0565	Z2-axis blade life limit.	6

ALID	ALTX		ALCD
5566	E0566	Blade cooling water error.	2
5567	E0567	Wafer washing water error.	2
22568	V0568	S/T ohmmeter error.	2
22569	V0569	C/T ohmmeter error.	2
22570	V0570	S/T high pressure water pressure is below limit.	2
5571	E0571	Z1-axis blade cooling water error.	2
5572	E0572	Z1-axis wafer cleaning water error.	2
5573	E0573	Z2-axis blade cooling water error.	2
5574	E0574	Z2-axis wafer cleaning water error.	2
5575	E0575	S/T rinse flow error.	6
5576	E0576	Deionized water pressure is below limit.	2
5577	E0577	Shutter is not closed.	6
5578	E0578	ABC Inner cover can not close.	6
5579	E0579	ABC Inner cover can not open.	6
15580	O0580	Barcode read error.	6
22581	V0581	Operation management is running.	6
2582	B0582	Calibrate Z1-axis sensor.	6
2583	B0583	Z1-axis setup error (error detection.)	6
2584	B0584	Z1-axis setup error (Z-axis position error.)	6
2585	B0585	Z1-axis setup error (No detection.)	6
2586	B0586	Large difference between first and second Non-Contact Setup of Z1.	6
2587	B0587	Z1-axis blade wear check error.	6
2588	B0588	Z1-axis setup data error.	6
2589	B0589	Calibrate Z2-axis sensor.	6
2590	B0590	Z2-axis setup error (error detection.)	6
2591	B0591	Z2-axis setup error (Z-axis position error.)	6
2592	B0592	Z2-axis setup error (No detection.)	6
2593	B0593	Large difference between first and second Non-Contact Setup of Z2.	6
2594	B0594	Z2-axis blade wear error.	6
2595	B0595	Z2-axis setup data error.	6
1596	A0596	Street adjust data error. Please re-teach.	9
5597	E0597	ABC Don't catch blade nut.	6
5598	E0598	ABC Don't catch blade.	6
5599	E0599	ABC RELEASE CYLINDER DOESN'T BE COME OUT	6
5600	E0600	ABC RELEASE CYLINDER CANNOT BE RETURNED.	6
5601	E0601	ABC SUPPLY CYLINDER CANNOT BE COME OUT.	6
5602	E0602	ABC SUPPLY CYLINDER CANNOT BE RETURNED.	6
5603	E0603	ABC BLADE CANNOT BE OFF.	6
5604	E0604	ABC THERE IS NO BLADE STOCKER.	6
5605	E0605	ABC TIME OUT OF TIGHTENING NUT.	6
5606	E0606	ABC There is no blade in the supply stocker.	6
5607	E0607	ABC NUT CAN'T TIGHTEN UP.	6
15608	O0608	Barcode data communication error.	6
15609	O0609	Device number corresponding to barcode data can not be found.	6
22610	V0610	C/T clamp error.	6
22611	V0611	Remove workpiece from C/T and re-initialize in full auto mode.	6
22612	V0612	Remove workpiece from C/T and re-initialize system.	6
22613	V0613	Rotation Table vacuum error.	6
22614	V0614	Orientation flat can not be found.	6
22615	V0615	UV lamp error.	6
22616	V0616	Rotation Table down error.	6
22617	V0617	Frame centering error.	6

ALID	ALTX		ALCD
22618	V0618	High pressure cutting water pressure is below limit.	6
22619	V0619	High pressure cutting water pressure is above limit.	6
24620	X0620	Turn Table axis unrecoverable error. Re-start machine.	6
24621	X0621	Turn Table axis unknown error.	6
24622	X0622	Turn Table axis servo error. Re-start machine.	6
22623	V0623	Frame centering error.	6
22624	V0624	S/T high pressure water pressure is above limit.	2
5625	E0625	Error occurred during cassette handling.	6
22626	V0626	Cassette centering up error.	6
22627	V0627	Cassette centering down error.	6
22628	V0628	Cassette positioning up error.	6
22629	V0629	Cassette positioning down error.	6
22630	V0630	Maintenance cover is not closed.	6
22631	V0631	Linear arm vacuum error. Set workpiece on S/T.	6
1632	A0632	X-axis stroke is too big. Increase theta adjustment stroke.	9
15633	O0633	Unprocessed workpiece is still in the cassette.	6
15634	O0634	Cassette loading/unloading time limit reached.	6
15635	O0635	Cassette Device Data cannot be found.	6
15636	O0636	Remove upper cassette.	6
15637	O0637	Remove lower cassette.	6
15638	O0638	Device Data cannot be found.	6
15639	O0639	Blade width is not consistent with data.	6
11640	K0640	Die check: Kerf not found.	A
11641	K0641	Die check: Off center.	A
11642	K0642	Die check: Kerf width too wide.	A
11643	K0643	Die check: Kerf width too narrow.	A
11644	K0644	Die check: Chipping size too large.	A
11645	K0645	Die check: Chipping area too wide.	A
11646	K0646	Die check: Target not found.	A
11647	K0647	Die check: Target position error.	A
11648	K0648	Die check: Kerf width (include chipping) too wide.	A
15649	O0649	Dress board life limit reached.	6
15650	O0650	Communication timeout error.	6
5651	E0651	Excessive spindle current error.	6
5652	E0652	Water leak detected.	6
5653	E0653	No precut workpiece.	6
5654	E0654	No precut area left. Press ALRMCLR to cancel full-auto operation.	6
5655	E0655	Workpiece placement error.	6
5656	E0656	Start interlock in operation.	6
15657	O0657	Barcode data error.	6
22658	V0658	Frame stopper will not open.	6
22659	V0659	Frame stopper will not close.	6
2660	B0660	Blade detection error. (Z1 partial blade breakage)	6
2661	B0661	Blade detection error. (Z1 total blade breakage)	6
2662	B0662	Blade detection error. (Z2 partial blade breakage)	6
2663	B0663	Blade detection error. (Z2 total blade breakage)	6
5664	E0664	Water leakage detected. (Drain tank)	6
5665	E0665	Water leakage detected (Spinner).	6
15666	O0666	Blade type incorrect. Confirm Device Data.	6
5667	E0667	Z1-axis blade cooling water error (Front).	2
5668	E0668	Z2-axis blade cooling water error (Rear).	2
5669	E0669	Z2-axis blade cooling water error (Front).	2

ALID	ALTX		ALCD
5670	E0670	Z2-axis blade cooling water error (Rear).	2
1671	A0671	Auto focusing height correction is too large.	2
5672	E0672	Non-Contact Setup water flow error.	2
22673	V0673	Multi point setup difference too large.	6
11674	K0674	Z-axis correction value exceeds limit. (over ±50μm)	6
15675	O0675	Z1Z2 blade type are the same. Confirm Device Data.	6
2676	B0676	Blade wear amount error (Z1).	6
2677	B0677	Blade wear amount error (Z2).	6
15678	O0678	Remove workpiece from inspection stage.	7
5679	E0679	Spindle revolution upper limit.	8
5680	E0680	Z1 spindle revolution upper limit.	8
5681	E0681	Z2 spindle revolution upper limit.	8
5682	E0682	Spindle revolution lower limit.	8
5683	E0683	Z1 spindle revolution lower limit.	8
5684	E0684	Z2 spindle revolution lower limit.	8
5685	E0685	Spindle load current upper limit.	8
5686	E0686	Z1 spindle load current upper limit.	8
5687	E0687	Z2 spindle load current upper limit.	8
5688	E0688	Spindle load current lower limit.	8
5689	E0689	Z1 spindle load current lower limit.	8
5690	E0690	Z2 spindle load current lower limit.	8
5691	E0691	X axis feed speed upper limit error.	8
5692	E0692	X axis feed speed lower limit error.	8
5693	E0693	Cut water flow (BLD F) upper limit.	8
5694	E0694	Z1 cut water flow(BLD F) upper limit.	8
5695	E0695	Z2 cut water flow(BLD F) upper limit.	8
5696	E0696	Cut water flow (BLD R) upper limit.	8
5697	E0697	Z1 cut water flow(BLD R) upper limit.	8
5698	E0698	Z2 cut water flow(BLD R) upper limit.	8
5699	E0699	Cut water flow (SHW) upper limit.	8
5700	E0700	Z1 cut water flow (SHW) upper limit.	8
5701	E0701	Z2 cut water flow (SHW) upper limit.	8
5702	E0702	Cut water flow (SP) upper limit.	8
5703	E0703	Z1 cut water flow (SP) upper limit.	8
5704	E0704	Z2 cut water flow (SP) upper limit.	8
5705	E0705	Cut water flow (BLD) lower limit.	8
5706	E0706	Z1 cut water flow(BLD F) lower limit.	8
5707	E0707	Z2 cut water flow(BLD F) lower limit.	8
5708	E0708	Cut water flow (BLD R) lower limit.	8
5709	E0709	Z1 cut water flow(BLD R) lower limit.	8
5710	E0710	Z2 cut water flow(BLD R) lower limit.	8
5711	E0711	Cut water flow (SHW) lower limit.	8
5712	E0712	Z1 cut water flow (SHW) lower limit.	8
5713	E0713	Z2 cut water flow (SHW) lower limit.	8
5714	E0714	Cut water flow (SP) lower limit.	8
5715	E0715	Z1 cut water flow (SP) lower limit.	8
5716	E0716	Z2 cut water flow (SP) lower limit.	8
5717	E0717	Resistivity upper limit error.	8
5718	E0718	Resistivity lower limit error.	8
5719	E0719	Cleaning water pressure upper limit error.	8
5720	E0720	Cleaning water pressure lower limit error.	8
5721	E0721	Cleaning water resistivity upper limit error.	8

ALID	ALTX		ALCD
5722	E0722	Cleaning water resistivity lower limit error.	8
5723	E0723		8
5724	E0724		8
5725	E0725		8
5726	B0726		6
11727	K0727	Kerf check: Theta error.	A
5728	E0728	Z1-axis blade cooling water error.	2
5729	E0729	Z1-axis blade cooling water error.	2
5730	E0730	Z1-axis blade cooling water error.	2
5731	E0731	Z1-axis blade cooling water error.	2
5732	E0732	Z2-axis blade cooling water error.	2
5733	E0733	Z2-axis blade cooling water error.	2
5734	E0734	Z2-axis blade cooling water error.	2
5735	E0735	Z2-axis blade cooling water error.	2
5736	E0736	UV function: N2 flow volume error.	6
5737	E0737	Lubricating oil pump pressure error.	6
5738	E0738	No lubricating oil.	6
5739	E0739	Refuel. Less than 16 percent lubricating oil.	6
5740	E0740	Lubricating oil is not flowing. Confirm oil type.	6
5741	E0741	Lubricating oil pressure error. (X-axis)	6
5742	E0742	Facility drain error.	6
5743	E0743	Mist separator error.	6
5744	E0744	Large difference between first and second AE sensor setup.	6
5745	E0745	AE sensor disconnected.	6
5746	E0746	Can not start AE sensor.	6
5747	E0747	No dress board.	6
5748	E0748	No dress area. Press ALRMCLR to cancel full auto operation.	6
5749	V0749	UV lamp usage life exceeded.	6
22750	V0750	Workpiece vacuum error.(ZONE1)	6
22751	V0751	Workpiece vacuum error.(ZONE2)	6
22752	V0752	Workpiece vacuum error.(ZONE3)	6
22753	V0753	Workpiece vacuum error.(ZONE4)	6
22754	V0754	No water is flowing in vacuum pump.	6
22755	V0755	Vacuum pump is not working.	6
22756	V0756	Vacuum pump pressure error.	6
5757	E0757	Breaker down. Please restart the machine.	6
1758	A0758	Position specific parameter error. Enter data for 1-3.	6
5759	E0759	Area sensor error.	6
5760	E0760	Duct unit error.	6
5761	E0761	Water leakage detected.(Drain Pan)	6
5762	E0762	Duct unit doesn't switchover.	6
5763	E0763	Cleaning brush up error.	6
5764	E0764	Cleaning brush down error.	6
5765	B0765	Z1-axis blade type is incorrect. Confirm Device Data.	6
2766	B0766	Z2-axis blade type is incorrect. Confirm Device Data.	6
5767	E0767	Please return lower cassette.	6
5768	E0768	Z1-axis cutting water error. (blade)	2
5769	E0769	Z1-axis cutting water error. (spray front)	2
5770	E0770	Z1-axis cutting water error. (spray rear)	2
5771	E0771	Z2-axis cutting water error. (blade)	2
5772	E0772	Z2-axis cutting water error. (spray front)	2
5773	E0773	Z2-axis cutting water error. (spray rear)	2

ALID	ALTX		ALCD
5774	E0774	Fan motor stopped.	2
5775	E0775	Rotary Arm extend error.	2
5776	E0776	Rotary Arm contraction error.	2
5777	E0777	Megasonic generator error	2
5778	E0778	Water for Megasonic generator error	2
5779	E0779	Ionizer power off(rotary arm)	6
5780	E7080	Ionizer power off(linear arm)	6
5781	E7081	Picker loader cover is open.	6
5782	E7082	Handler arm(SV95) is out of the right sensor.	6
5783	E7083	Handler arm(SV95) is out of the left sensor.	6
5784	E7084	Pusher1 arm(SV96) is out of the right sensor.	6
5785	E7085	Pusher1 arm(SV96) is out of the left sensor.	6
5786	E7086	Pusher2 arm(SV97) is out of the right sensor.	6
5787	E7087	Pusher2 arm(SV97) is out of the left sensor.	6
5788	E7088	Work piece can't be received by Picker.	6
5789	E7089	Picker power off	6
5790	E7090	Picker is power off during handling.	6
5791	E7091	There is a work piece on the handling stage.	6
5792	E0792	Cannot initialize full auto.	6
5793	E0793	Cannot start full auto.	6
22794	V0794	Jig vacuum error.	6
5795	E0795	Chucking stage cover is open	6
5796	E0796	Serial communication error.	6
5797	E0797	Spindle load current error.(HI)	6
5798	E0798	Spindle load current error.(LO)	6
1799	A0799	Alignment position data not inputted. (X-initial position)	9
1800	A0800	Alignment position data not inputted. (Y-initial position)	9
1801	A0801	Y index correction limit error. (Line no.)	9
1802	A0802	Theta correction limit error. (Line no.)	9
22803	V0803	Special alignt required for dicing. Confirm Process Control Table.	4
2804	B0804	Z1-axis setup position error.	6
2805	B0805	Z2-axis setup position error.	6
22806	V0806	Workpiece vacuum error.	6
22807	V0807	Workpiece vacuum error.	6
5808	E0808	Deionized water resistivity lower limit error.	8
5809	E0809	CO2 water resistivity lower limit error.	8
5810	E0810	Cleaning water pressure lower limit error.	8
5811	E0811	Cleaning water pressure upper limit error.	8
5812	E0812	Insufficient air(Air Curtain).	6
5813	E0813	Cut water flow (BLD) upper limit.	8
25000	X1000	Microscope-axis unrecoverable error. Restart the machine.	6
25001	X1001	Microscope-axis unknown error. Reinitialize.	6
25002	X1002	Microscope-axis servo error. Restart the machine.	6
25003	X1003	Microscope-axis CW end error. Reinitialize.	6
25004	X1004	Microscope-axis CCW end error. Reinitialize.	6
25005	X1005	Microscope-axis vibration error(near). Reinitialize.	6
25006	X1006	Microscope-axis vibration error(far). Reinitialize.	6
25007	X1007	Microscope-axis position error. Reinitialize.	6
25008	X1008	Microscope-axis scale retry error. Reinitialize.	6
25009	X1009	Microscope-axis parameter error. Reinitialize.	6
23010	V1010	W/T Sensor error. (OPEN Position)	6
23011	V1011	W/T Sensor error. (LOADING Position)	6

ALID	ALTX		ALCD
23012	V1012	W/T Sensor error. (CENTERING Position)	6
23013	V1013		6
23014	V1014	Up error (lower arm upper cylinder)	6
23015	V1015	Down error (lower arm upper cylinder)	6
23016	V1016	Up error (lower arm lower cylinder)	6
23017	V1017	Down error (lower arm lower cylinder)	6
23018	V1018	Upper Arm front end error.	6
23019	V1019	Upper Arm rear end error.	6
23020	V1020	Upper Arm up error.	6
23021	V1021	Upper Arm down error.	6
23022	V1022	Lower Arm front end error.	6
23023	V1023	Lower Arm rear end error.	6
23024	V1024	Upper Arm vacuum error.	6
23025	V1025	Lower Arm vacuum error.	6
16026	O1026		6
6027	E1027	Cassette position error (placement)	6
16028	O1028	Remove the workpiece from Upper Arm.	7
16029	O1029	Remove the workpiece from Lower Arm.	7
6030	E1030	PGV arm detection error.	7
6031	E1031	Lubricant flow error	7
6032	E1032	Inspection cover sensor error.	1
6033	E1033	Water leakage detected (Theta-axis).	6
6034	E1034	S/T cleaning water N2 pressure is above limit.	6
6035	E1035	S/T cleaning water flow is below limit.	6
16036	O1036	Inspection cassette switch turned OFF.	6
23037	V1037	Remove the workpiece from UV Stage.	6
23038	V1038	UV Glass plate close error.	6
23039	V1039	UV Glass plate open error.	6
23040	V1040	Finger clamp up end error.	6
23041	V1041	Finger clamp down end error.	6
16042	O1042	Can not find device number corresponding to PPID.	6
23043	V1043	NCS Cover open error.	6
23044	V1044	NCS Cover close error.	6
6045	E1045	Water leakage detected. (Drain tank or drain pan)	6
23046	V1046	Wheel Cover open error.	6
23047	V1047	Wheel Cover close error.	6
16048	O1048	Ionizer error was detected.	6
16049	O1049		6
16050	O1050	Workpiece thickness measurement result is out of range.	6
16051	O1051	Workpiece thickness measurement data not set.	6
16052	O1052	NSD maintenance not performed.	6
23053	V1053	Robot Pick vacuum error (during loading)	6
23054	V1054	Robot Pick vacuum error (during unloading)	6
3055	B1055	Sub-C/T Silicon Calibration Chip life end. Replace and retry CCS.	6
3056	B1056	No Silicon Calibration Chip on Sub-C/T.	6
3057	B1057	Chopper Cut Setup data is invalid.	6
3058	B1058	Z1-axis Chopper Cut Setup data is invalid.	6
3059	B1059	Z2-axis Chopper Cut Setup data is invalid.	6
16060	O1060	Workpiece Thickness Measurement Position Data is invalid.	6
23061	V1061	Lower Arm vacuum error (during loading).	6
23062	V1062	Lower Arm vacuum error (during unloading).	6
23063	V1063		6

ALID	ALTX		ALCD
23064	V1064		6
23065	V1065		6
3066	B1066		6
23067	V1067		6
23068	V1068		6
23069	V1069	Positioning Table vacuum error.	6
16070	O1070	Workpiece surface position error.	6
16071	O1071	NSD Workpiece Thickness Measurement position is not specified.	6
16072	O1072	Release the workpiece from the Robot Pick.	6
16073	O1073	NSD Supply air pressure error.	6
16074	O1074		6
3075	B1075	Z1Z2-axis Chopper Cut Setup data is invalid.	6
3076	B1076		6
23077	V1077		6
16078	O1078	Please set the cassette to the correct position.	6
2079	A1079	Cutting depth is invalid.	6
23080	V1080	Robot Pick vacuum error (in cassette).	6
16081	O1081	FOUP opener : Communication timeout error.	6
16082	O1082	FOUP opener : Data receiving failed.	6
16083	O1083	FOUP opener : Interlock error. (code=)	6
16084	O1084	Cleaning brush up error.	6
16085	O1085	Cleaning brush down error.	6
16086	O1086	FOUP opener : Error occurred. (code=)	6
16087	O1087	FOUP opener : Unrecoverable error. Restart the machine. (code=)	6
16088	O1088	FOUP opener : Protocol error.	6
16089	O1089	FOUP opener : Reply code error. (code=)	6
25090	X1090	Robot Pick-axis unrecoverable error. Restart the machine.	6
25091	X1091	Robot Pick-axis unknown error.	6
25092	X1092	Robot Pick-axis servo error. Restart the machine.	6
25093	X1093	Robot Pick-axis CW end error.	6
25094	X1094	Robot Pick-axis CCW end error.	6
25095	X1095	Robot Pick-axis vibration error (near).	6
25096	X1096	Robot Pick-axis vibration error (far).	6
25097	X1097	Robot Pick-axis position error.	6
25098	X1098	Robot Pick-axis scale retry error.	6
25099	X1099	Robot Pick-axis parameter error.	6
25100	X1100	Positioning table-axis unrecoverable error. Restart the machine.	6
25101	X1101	Positioning table-axis unknown error.	6
25102	X1102	Positioning table-axis servo error. Restart the machine.	6
16103	O1103		6
16104	O1104		6
16105	O1105		6
16106	O1106		6
16107	O1107		6
16108	O1108		6
16109	O1109		6
16110	O1110		6
16111	O1111		6
16112	O1112	FOUP Opener :Mapping result invalid.	6
16113	O1113	Can not switch Cassette lock ON.	6
16114	O1114	Can not switch Cassette lock OFF.	6
16115	O1115	Wafer ID recognition error.	6

ALID	ALTX		ALCD
16116	O1116	Wafer ID reader communication error.	6
2117	A1117	Blade Height is invalid.	6
16118	O1118	The cassette No. can not be used.	6
16119	01119	Cutting Depth is greater than work thickness.	6
16120	O1120	NSD deviation tolerance error.	6
16121	01121	NSD valve up error.	6
16122	01122	NSD valve down error.	6
16123	01123	NSD parameter error.	6
6124	E1124	Can not open S/T Cover.	6
6125	E1125	Can not close S/T Cover.	6
16126	O1126	FOUP :Initialization failed.	6
16127	O1127	Remove the workpiece from P/T.	7
16128	O1128	FOUP : Mapping parameter error.	6
12129	K1129	CC Setup : Kerf is not in center position.	6
23130	V1130	Robot Pick vacuum error.	6
16131	O1131	Protruding workpiece detected in elevator section.	6
6132	E1132	Kerf cannot be found.	8
3133	B1133	Non-Contact Setup check error (Z1).	6
3134	B1134	Non-Contact Setup check error (Z2).	6
6135	E1135	Cut section rear cover opened.	1
16136	O1136	Wafer ID recognition error (Surface).	6
16137	O1137	Wafer ID recognition error (Back).	6
16138	O1138	Wafer ID reader A recipe name is inaccurate.	6
16139	O1139	Failed to receive data from wafer ID reader.	6
16140	O1140	Wafer ID reader has not moved to predetermined position.	6
16141	O1141	Host command receive timeout error. (T3)	6
16142	O1142	Cassette lot number is not set up.	6
16143	O1143	Cassette ID read failed.	6
6144	E1144	Please remove cassette (rejected by the host).	6
6145	E1145	Remote command un-receivable state.	6
6146	E1146	Remote command receive error.	6
6147	E1147	Resistance value is invalid.	6
16148	O1148		6
23149	V1149	Up error (upper arm upper cylinder).	6
23150	V1150	Down error (upper arm upper cylinder).	6
23151	V1151	Up error (upper arm lower cylinder).	6
23152	V1152	Down error (upper arm lower cylinder).	6
23153	V1153	Upper Arm right end error.	6
23154	V1154	Upper Arm left end error.	6
23155	V1155	Lower Arm up error.	6
23156	V1156	Lower Arm down error.	6
23157	V1157	Shutter open error.	6
23158	V1158	Shutter close error.	6
16159	O1159		6
16160	O1160		6
16161	O1161		6
16162	O1162		6
2163	A1163	Invalid device data. Confirm device data and re-teach.	6
2164	A1164	Y-axes proximity error.	6
6165	E1165	Debris disposal box is open.	6
6166	E1166	Debris disposal flow sensor error.	6
6167	E1167	Please empty the debris box.	6

ALID	ALTX		ALCD
6168	E1168	Vacuum tank is full. Turn vacuum OFF.	6
6169	E1169	Vacuum tank water level has not reached low sensor.	6
6170	E1170	WARNING! Vacuum tank water level has reached HI sensor.	6
2171	A1171	Alignment position of workpiece and jig table is over the limit.	6
6172	E1172	Temperature vacuum pump error.	6
6173	E1173	Vacuum pump: excessive current.	6
6174	E1174	Slide cover opened.	6
16175	O1175	External transfer arm is located on the chuck table.	6
16176	O1176	Wafer has not been adsorbed by Bernoulli pad. (	6
6177	E1177	Debris box belt conveyer alarm state.	6
12178	K1178	Theta-axis workpiece displacement error.	6
16179	O1179	Bernoulli pad : Latch was not opened.	6
6180	E1180	Water leakage detected (Spinner or Drain pan).	6
6181	E1181	S/T over flow	6
23182	V1182	Workpiece vacuum error (Debris)	6
6183	E1183	CO2 bubbler error	6
6184	E1184	CO2 bubbler power off	6
23185	V1185	Water is not flowing in the vacuum pump.(for Duct)	6
23186	V1186	Vacuum pump is not working (for Duct).	6
23187	V1187	Vacuum pump pressure error (for Duct).	6
12188	K1188	Y-axis workpiece displacement error.	6
16189	O1189	UV Irradiation Stamp Arm up error.	6
16190	O1190	UV Irradiation Stamp Arm down error.	6
6191	E1191	Temperature compensation limit error.	6
16192	O1192	UV irradiance limit error.	6
16193	O1193	Upper Arm clamp error.	6
23194	V1194	Workpiece vacuum off error.	6
16195	O1195	C/T table set error.	6
23196	V1196	Spinner table vacuum off error.	6
6197	E1197	Handling cover (Rear) sensor error.	1
6198	E1198	Water leakage detected. (High Pressure Pump)	6
16199	O1199	Z2 microscope function is disabled.	6
16200	O1200	Present alignment pattern can not use Z2 microscope.	6
6201	E1201	Robot arm slide cover opened.	1
6202	E1202	Robot pick wafer sensor error.	1
6203	E1203	Wheel cover opened (Z1).	1
6204	E1204	Wheel cover opened (Z2).	1
16205	O1205	Workpiece on C/T. Continue only when cut is completely finished.	6
6206	E1206	Interlock circuit error. Please restart the machine.	1
6207	E1207	Z1-axis blade is broken. Only Z2-axis is processing.	1
6208	E1208	Z2-axis blade is broken. Only Z1-axis is processing.	1
6209	E1209		1
25210	X1210	Rotary Stage-axis unrecoverable error. Restart the machine.	6
25211	X1211	Rotary Stage-axis unknown error. Reinitialize.	6
25212	X1212	Rotary Stage-axis servo error. Restart the machine.	6
25213	X1213	Rotary Stage-axis CW end error. Reinitialize.	6
25214	X1214	Rotary Stage-axis CCW end error. Reinitialize.	6
25215	X1215	Rotary Stage-axis vibration error (near). Reinitialize.	6
25216	X1216	Rotary Stage-axis vibration error (far). Reinitialize.	6
25217	X1217	Rotary Stage-axis position error. Reinitialize.	6
25218	X1218	Rotary Stage-axis scale retry error. Reinitialize.	6
25219	X1219	Rotary Stage-axis parameter error. Reinitialize.	6

ALID	ALTX		ALCD
6220	E1220	Temperature lower limit error.	6
6221	E1221	Temperature upper limit error.	6
23222	V1222	Flow controller (Z1 BLD F): excessive current	6
23223	V1223	Flow controller (Z1 BLD R): excessive current.	6
23224	V1224	Flow controller (Z1 SHW): excessive current.	6
23225	V1225	Flow controller (Z1 SP): excessive current.	6
23226	V1226	Flow controller (Z2 BLD F): excessive current.	6
23227	V1227	Flow controller (Z2 BLD R): excessive current.	6
23228	V1228	Flow controller (Z2 SHW): excessive current.	6
23229	V1229	Flow controller (Z2 SP): excessive current.	6
16230	O1230		6
16231	O1231		6
16232	O1232		6
6233	E1233	Water leakage detected (chiller).	6
6234	E1234	Elevator sensor detected an obstacle.	7
16235	O1235	Please perform a dress.	7
16236	O1236		6
6237	E1237	Splash prevention shutter open error	6
6238	E1238	Splash prevention shutter close error	6
16239	O1239	Handling EM signal ON.	6
23240	V1240	Can't close wheel cover (Z1).	6
23241	V1241	Can't close wheel cover (Z2).	6
23242	V1242	Can't close lens shutter.	6
23243	V1243	Can't open lens shutter.	6
23244	V1244	Can't open wheel cover (Z1).	6
23245	V1245	Can't open wheel cover (Z2).	6
16246	O1246		6
16247	O1247		6
16248	O1248		6
16249	O1249		6
16250	O1250		6
16251	O1251		6
6252	E1252	Setup data invalid. Please non-contact setup.	6
6253	E1253	Setup data invalid. Please perform contact setup.	6
6254	E1254	Setup data invalid. Please perform chopper cut setup.	6
16255	O1255		6
16256	O1256	Data is inaccurate.	6
16257	O1257	Loading to P/T went wrong. Please check a state.	6
16258	O1258		6
6259	E1259	NSD voltage is unusual. (Before NSD air supply)	6
6260	E1260	NSD voltage is unusual. (After NSD air supply)	6
6261	E1261	The nozzle contacted during NSD execution.	6
6262	E1262	A robot pick has not been recognized. (half-cut is chosen)	6
6263	E1263	A clamp has not been recognized. (full-cut is chosen)	6
6264	E1264	The orifla sensor of the C/T size chosen has not been recognized.	6
16265	O1265	Remove workpiece from frame centering. Press <System initial> again.	6
16266	O1266	It is outside dress area.	6
23267	V1267	Upper arm vacuum error. Press <Alarm/Clr> and remove workpiece.	6
23268	V1268	Lower arm vacuum error. Press <Alarm/Clr> and remove workpiece.	6
2269	A1269	Edge was not found.	6
2270	A1270	Workpiece displacement offset error.	6
2271	A1271	Position rel of edge is abnormal. Displacement can not be calculated.	6

ALID	ALTX		ALCD
2272	A1272	The work thickness is thicker.	4
2273	A1273	The work thickness is thinner.	4
6274	E1274	CDU error. ( )	6
6275	E1275		6
16276	O1276	Communication status is unusual.	6
6277	E1277		6
6278	E1278		6
6279	E1279	Water resistivity upper limit error.	6
6280	E1280	Water resistivity lower limit error.	6
6281	E1281	Z-axis autodown correction limit error.	6
23282	V1282	Spinner table JIG vacuum error.	6
6283	E1283	Ball position detect error occurred of handler. Cutting stopped.	6
6284	E1284	Slide cover is opened. Spinner Stopped.	6
16285	O1285	Hair line limit over.(once)	6
16286	O1286	Hair line limit over.(total)	6
6287	E1287	Handler arm is in process or error.	6
16288	O1288	Workpiece on chuck table is unprocessed.	6
6289	E1289	Overflow happened in spinner.	6
16290	O1290	Workpiece on C/T.	6
12291	K1291	Off center adjust correction over (KERF CHECK)	6
12292	K1292	Z-AXIS correction value exceeds the limit.	6
16293	O1293	Remove workpiece between cassette and frame centering.	6
16294	O1294	Foup cover sensor error.	6
16295	O1295	No jig at S/T.	6
16296	O1296	EAD Reserved.	6
16297	O1297	EAD Reserved.	6
3298	B1298	At dress timing (Z1). Perform dressing.	6
3299	B1299	At dress timing (Z2). Perform dressing.	6
6300	E1300	Please replace dresser board of Y1 side.	6
6301	E1301	Please replace dresser board of Y2 side.	6
6302	E1302	Please replace dresser boards of both side.	6
23303	V1303	Dress Table vacuum error. (Y1 side)	6
23304	V1304	Dress Table vacuum error. (Y2 side)	6
3305	B1305	At blade exposure limit.	

12. SUPPLEMENTAL EXPLANATION

Summary of this section

Section No.	Title	Contents
12-1	Revision History	Revision history

12-1. Revision History

Revision history

Document No.	DPR No.	Changes
TRKB04K032	--	・Newly issued
TRKB10K068	--	・Network setting [In the case of Windows XP] added to Section 2-2 [Communication Parameters and FA Screens] ・Format of this focument changed
GK317-0003-00	--	・The nework setting procedures for Windows 7 added to Section 2-2 [Communication Parameters and FA Screens]