SECS/GEM Documentation

For Equipment:

Biometric-Assembly

Revision

0.7

Released On: April. 07. 2025

**Document History**

| **Version** | **Datum** | **Author** | **Remarks** |
| --- | --- | --- | --- |
| 0.1 | 27.11.2022 | Harald Frick | First Draft |
| 0.2 | 04.08.2023 | Harald Frick | Updated some CE numbers to avoid double numbers – see chapter “All Collection Events”  Reworked chapter “OPERATIONAL FLOW” + “Remote Commands” |
| 0.3 | 27.04.2024 | Harald Frick | Added additional Events (CEs 8000 - 8076) and Data Variables (DVs 9000 - 9076) |
| 0.4 | 06.12.2024 | Harald Frick | Added new Events and Data Variables |
| 0.5 | 25.01.2025 | Harald Frick | Updated Alarm Table |
| 0.6 | 28.01.2025 | Harald Frick | Added chapter for APC Parameter transfer |
| 0.7 | 07.04.2025 | Harald Frick | Added CE/DV for Siplace data |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Contents

[Contents 3](#_Toc120351913)

[GEM State Models 7](#_Toc120351914)

[Communication State Model 7](#_Toc120351915)

[1. General Description 7](#_Toc120351916)

[2. Communications State Diagram 7](#_Toc120351917)

[3. State Definitions 7](#_Toc120351918)

[4. State Transition Table 8](#_Toc120351919)

[5. Related Variables, Constants and Events 10](#_Toc120351920)

[Control State Model 10](#_Toc120351921)

[6. General Description 10](#_Toc120351922)

[7. Control State Diagram 10](#_Toc120351923)

[8. Control State Definitions 10](#_Toc120351924)

[9. Control State Transition Table 12](#_Toc120351925)

[10. Related Variables, Constants and Events 13](#_Toc120351926)

[Equipment Processing State Model 13](#_Toc120351927)

[11. General Description 13](#_Toc120351928)

[12. Equipment Processing State Diagram 13](#_Toc120351929)

[13. Equipment Processing State Definitions 15](#_Toc120351930)

[14. Equipment Processing State Transition Table 15](#_Toc120351931)

[15. Related Variables, Constants and Events 17](#_Toc120351932)

[16. Processing State Model Events 19](#_Toc120351933)

[Alarm State Model 22](#_Toc120351934)

[17. General Description 22](#_Toc120351935)

[18. Alarms State Diagram 22](#_Toc120351936)

[19. Alarms State Definitions 23](#_Toc120351937)

[20. Alarms State Transition Table 23](#_Toc120351938)

[21. Related Variables, Constants and Events 23](#_Toc120351939)

[Machine Capabilities 23](#_Toc120351940)

[Establish Communications 23](#_Toc120351941)

[22. Purpose 23](#_Toc120351942)

[23. Description 23](#_Toc120351943)

[24. Scenarios 24](#_Toc120351944)

[Data Collection 27](#_Toc120351945)

[25. Purpose 27](#_Toc120351946)

[26. Detailed Description 27](#_Toc120351947)

[27. Scenarios 27](#_Toc120351948)

[28. Dynamic Event Report Configuration 27](#_Toc120351949)

[29. Trace Data Collection 28](#_Toc120351950)

[30. Status Data Collection 29](#_Toc120351951)

[Alarm Management 29](#_Toc120351952)

[31. General Description 30](#_Toc120351953)

[32. Scenarios 30](#_Toc120351954)

[Remote Commands 31](#_Toc120351955)

[33. Purpose 31](#_Toc120351956)

[34. Description 31](#_Toc120351957)

[35. Scenarios 32](#_Toc120351958)

[Equipment Constants 33](#_Toc120351959)

[36. Purpose 33](#_Toc120351960)

[37. Description 33](#_Toc120351961)

[38. Scenarios 33](#_Toc120351962)

[Process Recipe Management 34](#_Toc120351963)

[39. Purpose 34](#_Toc120351964)

[40. Description 34](#_Toc120351965)

[41. Scenarios 34](#_Toc120351966)

[Event Report Acknowledge 37](#_Toc120351967)

[Event Report Acknowledge 37](#_Toc120351968)

[Equipment Terminal Services 38](#_Toc120351969)

[42. Purpose 38](#_Toc120351970)

[43. Detailed Description 38](#_Toc120351971)

[44. Scenarios 38](#_Toc120351972)

[Control 38](#_Toc120351973)

[45. Purpose 38](#_Toc120351974)

[46. Description Control Configuration 38](#_Toc120351975)

[47. Scenarios 39](#_Toc120351976)

[Operational Flow 42](#_Toc120351977)

[Material Movement – Move In 42](#_Toc120351978)

[Process Flow 42](#_Toc120351979)

[48. Download Recipe 42](#_Toc120351980)

[49. Create Process Job 42](#_Toc120351981)

[50. Create Control Job **Error! Bookmark not defined.**](#_Toc120351982)

[51. Start 44](#_Toc120351983)

[52. Load Next Tray/Wafer **Error! Bookmark not defined.**](#_Toc120351984)

[53. Read Barcode **Error! Bookmark not defined.**](#_Toc120351985)

[54. Load Wafer/tray Map **Error! Bookmark not defined.**](#_Toc120351986)

[55. Upload Wafer/Tray Map **Error! Bookmark not defined.**](#_Toc120351987)

[Material Movement – Move Out 45](#_Toc120351988)

[56. Material processing Completed 45](#_Toc120351989)

[Process Flow Complete **Error! Bookmark not defined.**](#_Toc120351990)

[E142 Maps **Error! Bookmark not defined.**](#_Toc120351991)

[57. Wafer Map Download Format **Error! Bookmark not defined.**](#_Toc120351992)

[58. Wafer Map Upload Format **Error! Bookmark not defined.**](#_Toc120351993)

[SECS-II Message Summary 49](#_Toc120351994)

[Control State Dependency 49](#_Toc120351995)

[Host Initiated 49](#_Toc120351996)

[Equipment Initiated 50](#_Toc120351997)

[Streams and Functions 50](#_Toc120351998)

[Stream 1: Equipment Status 50](#_Toc120351999)

[59. S1, F1 Are You There Request (H⬄E) 50](#_Toc120352000)

[60. S1, F1 On-line Data (H🡨E) 50](#_Toc120352001)

[61. S1, F2 On-line Data (H🡪E) 51](#_Toc120352002)

[62. S1, F3 Selected Equipment Status Request (H🡪E) 51](#_Toc120352003)

[63. S1, F4 Selected Equipment Status Data (H🡨E) 51](#_Toc120352004)

[64. S1, F11 Status Variable Namelist Request (H🡪E) 51](#_Toc120352005)

[65. S1, F12 Status Variable Namelist Reply (H🡨E) 51](#_Toc120352006)

[66. S1, F13 Establish Communications Request (H🡪E) 51](#_Toc120352007)

[67. S1, F14 Establish Communications Request Acknowledge (H🡪E) 51](#_Toc120352008)

[68. S1, F13 Establish Communications Request (H🡨E) 52](#_Toc120352009)

[69. S1, F14 Establish Communications Request Acknowledge (H🡨E) 52](#_Toc120352010)

[Stream 2: Equipment Control and Diagnostics 52](#_Toc120352011)

[70. S2, F13 Equipment Constant Request (H🡪E) 52](#_Toc120352012)

[71. S2, F14 Equipment Constant Data (H🡨E) 52](#_Toc120352013)

[72. S2, F15 New Equipment Constant Send (H🡪E) 52](#_Toc120352014)

[73. S2, F16 New Equipment Constant Acknowledge (H🡨E) 52](#_Toc120352015)

[74. S2, F33 Define Report (H🡪E) 52](#_Toc120352016)

[75. S2, F34 Define Report Acknowledge (H🡨E) 53](#_Toc120352017)

[76. S2, F35 Link Event Report (H🡪E) 53](#_Toc120352018)

[77. S2, F36 Link Event Report Acknowledge (H🡨E) 53](#_Toc120352019)

[78. S2, F37 Enable/Disable Event Report (H🡪E) 53](#_Toc120352020)

[79. S2, F38 Enable/Disable Event Report Acknowledge (H🡨E) 54](#_Toc120352021)

[80. S2, F39 Host Command Send (H🡪E) 54](#_Toc120352022)

[81. S2, F40 Multi-block Grant (DMBG) (H🡨E) 54](#_Toc120352023)

[82. S2, F41 Host Command Send (H🡪E) 54](#_Toc120352024)

[83. S2, F42 Host Command Acknowledge (H🡨E) 54](#_Toc120352025)

[Stream 5: Exception Reporting 54](#_Toc120352026)

[84. S5, F1 Alarm Report Send (H🡨E) 54](#_Toc120352027)

[85. S5, F2 Alarm Report Acknowledge (H🡪E) 54](#_Toc120352028)

[86. S5, F3 Enable/Disable Alarm Send (H🡪E) 54](#_Toc120352029)

[87. S5, F4 Enable/Disable Alarm Acknowledge (H🡨E) 55](#_Toc120352030)

[88. S5, F5 List Alarms Request (H🡪E) 55](#_Toc120352031)

[89. S5, F6 List Alarms Data (H🡨E) 55](#_Toc120352032)

[Stream 6: Data Collection 55](#_Toc120352033)

[90. S6, F11 Event Report Send (H🡨E) 55](#_Toc120352034)

[91. S6, F12 Event Report Acknowledge (H🡪E) 56](#_Toc120352035)

[Stream 7: Process Program Management 56](#_Toc120352036)

[92. S7, F1 Process Program Load Inquire (H⬄E) 56](#_Toc120352037)

[93. S7, F2 Process Program Load Grant (H⬄E) 56](#_Toc120352038)

[94. S7, F3 Process Program Send (H⬄E) 56](#_Toc120352039)

[95. S7, F4 Process Program Acknowledge (H⬄E) 56](#_Toc120352040)

[96. S7, F5 Process Program Request (H⬄E) 56](#_Toc120352041)

[97. S7, F6 Process Program Data (H⬄E) 56](#_Toc120352042)

[98. S7, F17 Delete Process Program Send (H🡪E) 56](#_Toc120352043)

[99. S7, F18 Delete Process Program Acknowledge (H🡨E) 56](#_Toc120352044)

[100. S7, F19 Current EPPD Request (H🡪E) 56](#_Toc120352045)

[101. S7, F20 Current EPPD Data (H🡨E) L, n 57](#_Toc120352046)

[102. S7F, 23 Formatted Process Program Send (H⬄E) 57](#_Toc120352047)

[103. S7, F24 Formatted Process Program ACKNOWLEDGE (H⬄E) 57](#_Toc120352048)

[104. S7, F25 Formatted Process Program Request (H⬄E) 57](#_Toc120352049)

[Stream 9: System Errors 57](#_Toc120352050)

[105. S9, F1 Unrecognized Device ID (H⬄E) 57](#_Toc120352051)

[106. S9, F3 Unrecognized Stream Type (H⬄E) 57](#_Toc120352052)

[107. S9, F5 Unrecognized Function Type (H🡨E) 57](#_Toc120352053)

[108. S9, F7 Illegal Data (H🡨E) 57](#_Toc120352054)

[109. S9, F9 Transaction Timer Timeout (H🡨E) 58](#_Toc120352055)

[110. S9, F11 Data Too Long (H🡨E) 58](#_Toc120352056)

[111. S9, F13 Conversation Timeout (H🡨E) 58](#_Toc120352057)

[Stream 10: Terminal Services 58](#_Toc120352058)

[112. S10, F3 Terminal Display (Single) (H🡪E) 58](#_Toc120352059)

[113. S10, F4 Terminal Display (Single) Acknowledge (H🡨E) 58](#_Toc120352060)

[Stream 14: E142 Map Request 58](#_Toc120352061)

[114. S14, F1 GetAttr Request (H🡨E) 58](#_Toc120352062)

[115. S14, F2 GetAttr Data (H🡪E) 58](#_Toc120352063)

[Data Item Definition Table 59](#_Toc120352064)

[All Definitions 64](#_Toc120352065)

[All Collection Events 64](#_Toc120352066)

[All Equipment Constants 76](#_Toc120352067)

[All Data Variables 84](#_Toc120352068)

[All Status Variables 96](#_Toc120352069)

[All Alarms 100](#_Toc120352070)

# GEM State Models

## Communication State Model

### General Description

The Communications State Model defines the behavior of the equipment in relation to the existence or absence of a communications link with the host. Two major states of SECS communication protocols are DISABLED and ENABLED. The ENABLED state has two sub states, NOT COMMUNICATING and COMMUNICATING.

### Communications State Diagram



### State Definitions

#### DISABLED

The equipment does not desire SECS-II communication with a host computer. If the operator switches from ENABLED to DISABLED, all SECS-II communications will cease immediately. Any unsent messages are discarded. All further actions on any open transactions and conversations are terminated. Refer to SEMI E5 for definitions of SECS-II transaction and conversation protocols. The DISABLED State may be the system default.

#### ENABLED

The equipment desires SECS-II communication with a host computer. 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. Lower-level protocols (such as SECS-I or HSMS-SS) are assumed to be functioning normally in that they are capable of supporting the communication of SECS-II syntax. The ENABLED State may be the system default.

#### NOT COMMUNICATING

Only messages S1, F13, S1, F14, and Stream 9 are sent while this substate is active. The equipment discards any messages received from the host other than S1, F13 or S1, F14. It periodically attempts to establish communication with a host computer by issuing an S1, F13 until communications are successfully established. Only one equipment-initiated S1, F13 transaction is open at any time.

The NOT COMMUNICATING state has two substates, HOST-INITIATED CONNECT and EQUIPMENT-INITIATED CONNECT. Both are active whenever the equipment is NOT COMMUNICATING. These substates clarify the behavior of the equipment in the event that both the equipment and the host attempt to establish communications during the same period of time. Note that in the Harrel notation, an exit from any substate is an exit from the parent state and thus from all other substates of that parent substate.

#### EQUIPMENT-INITIATED CONNECT

This state has two substates, WAIT CRA and WAIT DELAY. Upon any entry to the NOT COMMUNICATING State, whenever EQUIPMENT-INITIATED CONNECT first becomes active, a transition to WAIT CRA occurs. The CommDelay timer is then set to “expired,” and an immediate attempt to send S1, F13 is made.

#### WAIT CRA

An establish-communications request has been sent. The equipment waits for the host to acknowledge the request.

#### WAIT DELAY

A connection-transaction failure has occurred. The CommDelay timer has been initialized. The equipment waits for the timer to expire.

#### HOST-INITIATED CONNECT

This state describes the behavior of the equipment in response to a host-initiated S1, F13 while NOT COMMUNICATING is active.

#### WAIT CR FROM HOST

The equipment waits for an S1, F13 from the host. If an S1, F13 is received, the equipment attempts to send an S1, F14 with COMMACK = 0.

#### COMMUNICATING

Communications have been established between the equipment and host. The equipment may receive any message from the host, including S1, F13. When the equipment is COMMUNICATING, SECS communications with a host computer must be maintained. This state remains active until communications are disabled or a communication failure occurs. If the equipment receives S1, F13 from the host while in the COMMUNICATING substate, it should respond with S1, F14 with COMMACK set to zero. If the equipment receives S1, F14 from a previously sent S1, F13, and no action is required.

In case of communication failure, the equipment returns to the NOT COMMUNICATING substate and attempts to re-establish communications with the host.

It is possible that the equipment will be waiting for an S1, F14 from the host in EQUIPMENT-INITIATED CONNECT/WAIT CRA when an S1, F13 is received from the host in HOST-INITIATED CONNECT/WAIT CR FROM HOST. When this situation occurs, both equipment and host have an open S1, F13/S1, F14 transaction. Since communications are successfully established on the favorable completion of any S1, F13/S1, F14 transaction, either of these two transactions may be the first to complete successfully and to cause the transition from NOT COMMUNICATING to COMMUNICATING. In this event, the other transaction remains open regardless of the transition to COMMUNICATING until it is closed in a normal manner.

If the equipment has not yet sent an S1, F14 to a previously received S1, F13 at the time when COMMUNICATING becomes active, the S1, F14 response is sent in a normal manner. This includes transmissions that may have started but not yet successfully completed at the time that the transition to COMMUNICATING occurs. A failure to send the S1, F14 is then treated as any other communication failure. S1, F13/S1, F14

If the equipment-initiated transaction (S1F13/F14) is still open when the transition to COMMUNICATING occurs, then a subsequent failure to receive a reply from the host is considered a communication fault by the equipment. An S9, F9 is sent when a transaction timer timeout occurs.

### State Transition Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Current State | Trigger | New State | Action | Comment |
| 1 | (Entry to COMMUNICATIONS) | 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. 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 COMMUNICATING | None | May enter from system initialization to ENABLED or through operator switch to ENABLED. |
| 5 | (Entry to EQUIPMENT-INITITATED CONNECT) | (Any entry to NOT COMMUNICATING) | WIAT 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. | 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 reply. Set CommDelay timer “expired”. Send S1, F13. | Indicates opportunity to establish communications. |
| 9 | WAIT CRA | Received expected S1, F14 with COMMACK=0 | COMMUNICATING | None. | Communications established. |
| 10 | (Entry to HOST-INITIATED CONNECT) | (Any entry to NOT COMMUNICATING) | WAIT CR FROM HOST | None. | Wait for S1, F13 from Host. |
| 14 | COMMUNCATING | Communication failure | NOT COMMUNICATING | Dequeue all messages queued to send. | Dequeued messages may be placed in spool buffer as appropriate. |
| 15 | WAIT CR FROM HOST | Received S1,F13 | COMMUNICATING | Send S1,F14 with COMMACK = 0 | Communications are established. |

### Related Variables, Constants and Events

For complete descriptions, refer to the Appendix.

|  |  |
| --- | --- |
| Name | Type |
| EstablishCommunicationsTimeout | Equipment Constant |
| DefaultCommState | Equipment Constant |
| CommState | Status Variable |
| CommEnableSwitch | Status Variable |

## Control State Model

### General Description

The Control State Model defines the level of cooperation between the host and equipment. This model also specifies how the operator may interact at the different levels of host control and defines the equipment’s responsibility to act upon messages that it receives. Three levels of control exist. The highest level, REMOTE, allows the host to control the equipment to the full extent possible. The middle level, LOCAL, allows the host to access all information, but places some limitations on how the host may control equipment operation. The lowest level, OFF-LINE, allows no host control and no access.

### Control State Diagram



### Control State Definitions

#### OFF-LINE

When the OFF-LINE State is active, operation of the equipment is only performed by the operator at the operator console. Message transfer is severely restricted. The equipment will respond with an Sx, F0 to any primary message from the host other than S1, F13 or S1, F17. It will process and respond to S1, F13 (establishment of communications) and S1, F17 (host request to activate the ON-LINE State). The equipment will accept the S1, F17 and send a positive response only when the HOST OFF-LINE state is active (see transition 11 in the Control State Transition Table).

While the OFF-LINE State is active, the equipment will not send any primary messages other than S1, F13, S9, Fx, and S1, F1 (see ATTEMPT ON-LINE substate). Sending of S1, F13 is based upon the COMMUNICATIONS State Model. S9, Fx messages is issued only in response to the messages to which the equipment will normally respond while OFF-LINE (i.e., S1, F13 and S1, F17). If the equipment receives a reply message from the host other than S1, F14 or S1, F2, this message is discarded.

No messages enter the spool when the system is OFF-LINE. Spooling may be active when the Communications State of NOT COMMUNICATING is active. This might occur during OFF-LINE, but since the equipment will not attempt to send messages except as mentioned in the previous paragraph, no messages will enter the spool. The equipment may send S1, F1 or S1, F13, but since Stream 1 messages are not eligible for spooling, they will not enter the spool.

OFF-LINE has three substates: EQUIPMENT OFF-LINE, ATTEMPT ON-LINE, and HOST OFF-LINE.

#### EQUIPMENT OFF-LINE

While this state is active, the system maintains the OFF-LINE State. It awaits operator instructions to attempt to go ON-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 an S1, F1 to the host. Note that when this state is active, the system does not respond to operator actuation of either the ON-LINE or the OFF-LINE switch.

#### HOST OFF-LINE

While the HOST OFF-LINE state is active, the operator’s intent is that the equipment be ON-LINE. However, the host has not agreed. Entry to this state may be due to a failed attempt to go ON-LINE or to the host’s request that the equipment go OFF-LINE from ON-LINE (see the Control State Transition Table for more detail). While this state is active, the equipment positively responds to any host’s request to go ON-LINE (S1, F17). Such a request is 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 active. Capabilities available to the host are similar to those available from the operator console wherever practical. The equipment may go ON-LINE only when the Communication State is COMMUNICATING.

#### LOCAL

Operation of the equipment is implemented by direct action of an operator. All operation commands are available for input at the local operator console of the equipment.

The host has the following capabilities and restrictions when the LOCAL State is active:

* During processing, the host may be prohibited from modifying equipment constants that affect that process. Other equipment constants are changeable during processing. The host may modify all available equipment constants when no processing is in progress.
* The host is prohibited from the use of any remote command that causes motion or adversely affects processing.
* The host may initiate the upload and download of recipes to or from the recipe storage area on the equipment unless it affects the current recipe during processing.
* The host may configure automatic data reporting capabilities including alarms, event reporting, and trace data reporting. The host receives all such reports at the appropriate times.
* The host may inquire for data from the equipment, including status data, equipment constants, event reports, process program directories, and alarms.
* The equipment may perform Terminal Services.

The host is allowed any other capabilities that were not specifically restricted in the above items as long as the LOCAL State is active.

Note: Capabilities mentioned above which are not implemented on specific equipment may be ignored in this context.

#### REMOTE

While the REMOTE State is active, the host may operate the equipment through the communications interface. All functionality allowed during the LOCAL State is also allowed in the REMOTE State. The equipment does not restrict any host capabilities when REMOTE is active. The host may issue remote commands according to each command’s availability. No capabilities that are available to the operator during LOCAL control are unconditionally restricted when the REMOTE State is active. Control is shared between the host and the local operator

### Control State Transition Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Current State | Trigger | New State | Action | Comments |
| 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 | EQUIPMEN 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 on ON\_LINE state | ON-LINE (LOCAL) | None | “Control State LOCAL” |
| 8 | LOCAL | Operator selects Remote Mode | REMOTE | None | “Control State REMOTE” |
| 9 | REMOTE | Operator selects Local Mode | LOCAL | None | “Control State LOCAL” |
| 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. |

### Related Variables, Constants and Events

For complete descriptions, refer to the Appendix.

|  |  |
| --- | --- |
| Name | Type |
| ControlState | Status Variable |
| CtrlStateSwitch | Status Variable |
| CtrlOnlineSwitch | Status Variable |
| DefCtrlOfflineState | Equipment Constant |
| DefaultCtrlState | Equipment Constant |
| ControlStateLocal | Collection Event |
| ControlStateRemote | Collection Event |
| EquipmentOffline | Collection Event |

## Equipment Processing State Model

### General Description

The Equipment Processing State Model defines the operation of the machine. Because operation varies between machines, the GEM standard does not define a specific model.

### Equipment Processing State Diagram



### Equipment Processing State Definitions

#### INIT

Initialization is occurring

#### INIT WITH ALARMS

An alarm occurred during initialization

#### IDLE

In this state, the equipment is awaiting instructions. There is no process program selected and no lot open.

#### PROCESS ACTIVE

This state is the parent of all substates where the context of process program execution exists and a lot is open.

#### PROCESS

This state is the parent of those substates that refer to the active preparation and execution of a process program.

#### SETTING UP

In this state the equipment is preparing or being prepared to enter the READY state.

#### READY

In this state the equipment is ready for process execution and is awaiting a START command from the operator or the host.

#### EXECUTING

This state refers to the executing of a process program automatically and can continue to do so without external intervention.

#### PAUSE

This state is the parent of those substates that refer to the suspension of execution and waiting for a command either from an alarm or pause event

#### PROCESS PAUSE

This state is the parent of those substates that refer to the suspension of execution and the resumption of processing.

#### PAUSED

In this state the equipment PROCESS state has been suspended

#### CHECKING

In this state the process program is checked for validity, if the process program has not changed then this state is a pass-through state

#### ALARM PAUSED

In this state the PROCESS state has been suspended because of an alarm condition

#### STOPPING

In this state the equipment is acting upon a STOP command

#### ABORTING

In this state the equipment is acting upon an ABORT command

#### ABORTED

In this state the equipment has aborted processing

### Equipment Processing State Transition Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Current State | Trigger | New State | Action | Event |
| 1 | INIT | Equipment initialization complete | IDLE | None | 504 |
| 2 | IDLE | Process program is downloaded and selected | SETTING UP | Equipment prepares and /or is prepared to receive START command | 508 |
| 3 | SETTING UP | All activities need to start a process program have been completed | READY | Wait for Start command | 507 |
| 4 | READY | Equipment has received a START command from the host or operator console. | EXECUTING | Equipment starts executing | 511 |
| 5 | EXECUTING | Equipment has finished lot of wafers | READY | Last wafer is unloaded and wafer cassette elevator is moved to PGV access point – OR – The Local User chooses to close job and current wafer is unloaded | 507 |
| 6 | PROCESS | Equipment has received a PAUSE command from host or operator console, or a PAUSE EVENT has ocurred | PAUSED | Equipment pauses and waits for RESUME | 506 |
| 7 | PAUSED | Equipment has received a RESUME command from host or operator console | CHECKING | EQUIPMENT determines if the Process Program has been changed and starts validation process if it has | 513 |
| 8 | CHECKING | Equipment has validated any changes made to the Process Program or falls through if no changes made | PROCESS | Equipment resumes operation | 507,508 or 511 |
| 9 | CHECKING | Equipment has failed to validated changes made to the Process Program | PAUSED | Equipment displays warning | 506 |
| 10 | PROCESS | An alarm occurs | ALARM PAUSED | Equipment displays alarm status | 509 |
| 11 | ALARM PAUSED | Alarm is cleared | PAUSED | Equipment waits for RESUME command | 506 |
| 12 | PROCESS PAUSE | An alarm occurs after RESUME command | ALARM PAUSED | Equipment displays alarm status | 509 |
| 13 | PAUSE | Equipment receives a STOP command | STOPPING | Equipment executes the STOP sequence | 512 |
| 14 | PAUSE | Equipment receives an ABORT command | ABORTING | Equipment aborts operation as soon as possible | 510 |
| 15 | ABORTING | Equipment has completed the ABORT command | ABORTED | Equipment displays ABORT data | 503 |
| 16 | ABORTED | ABORT state is cleared | IDLE | Equipment waits for next Process Program to execute | 504 |
| 17 | STOPPING | Equipment receives an ABORT command | ABORTING | Equipment aborts operation as soon as possible | 510 |
| 18 | STOPPING | Equipment has completed the STOP command | IDLE | Equipment waits for next Process Program to execute | 504 |
| 19 | INIT | Failed to initialize | INIT WITH ALARMS | Display alarm and wait for alarm to be cleared | 505 |
| 20 | INIT WITH ALARMS | Alarm cleared | INIT | Wait for initialization to be performed | 514 |
| 21 | PROCESS | Equipment receives an ABORT command | ABORTING | Equipment aborts operation as soon as possible | 510 |
| 22 | PROCESS | Equipment has received a STOP command from host or operator console. | STOPPING | Equipment executes the STOP sequence | 512 |

### Related Variables, Constants and Events

For complete descriptions, refer to the Appendix.

|  |  |
| --- | --- |
| Name | Type |
| ProcessStateString | Status Variable |
| PREVIOUSPROCESSSTATE | Status Variable |
| ProcessState | Status Variable |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

### Processing State Model Events

Below are the events and functions associated with the Processing State model.

|  |  |  |
| --- | --- | --- |
| Event CEID | Name | Description |
| 11 | ProcessingStateChange | Generic event triggered when the processing state changes ( only is triggered if there is no unique event assigned to the state transition ) |
| 503 | ProcessingState\_Aborted | Event triggered when the Tool transitions from ABORTING to ABORTED as the result of an ABORT command |
| 504 | ProcessingState\_IDLE | Event triggered when Tool transitions to the IDLE state |
| 505 | ProcessingState\_INITALARMS | Event triggered when the Tool transitions from INIT to INITWITH ALARMS IDLE as the result of a problem during initialization |
| 506 | ProcessingState\_PAUSED | Event triggered when Tool transitions to the PAUSED state |
| 507 | ProcessingState\_READY | Event triggered when Tool transitions to the READY state |
| 508 | ProcessingState\_SETTING\_UP | Event triggered when Tool transitions to the SETTING UP state as the result of a PP\_SELECT command |
| 509 | ProcessingState\_ALARMPAUSED | Event triggered when Tool transitions to the ALARMPAUSED state as the result of an alarm |
| 510 | ProcessingState\_ABORTING | Event triggered when Tool transitions to the ABORTING state as a result of receiving an ABORT command |
| 511 | ProcessingState\_EXECUTING | Event triggered when a wafer/tray is ready to be processed |
| 512 | ProcessingState\_STOPPING | Event triggered when Tool transitions to the STOPPING state as a result of receiving a STOP command |
| 513 | ProcessingState\_CHECKING | Event triggered when Tool transitions to the CHECKING state as a result of receiving a RESUME command |
| 514 | ProcessingState\_INIT | Event triggered when Tool transitions to the INIT state |

#### Event 503 – ProcessingState\_Aborted

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 504 – ProcessingState\_IDLE

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 505 – ProcessingState\_INITALARMS

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 506 – ProcessingState\_PAUSED

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 507 – ProcessingState\_READY

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 508 – ProcessingState\_SETTING\_UP

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 509 – ProcessingState\_ALARMPAUSED

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 510 – ProcessingState\_ABORTING

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 511 – ProcessingState\_EXECUTING

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 512 – ProcessingState\_STOPPING

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 513 – ProcessingState\_CHECKING

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

#### Event 514 – ProcessingState\_INIT

Below is the list of status variables associated with the collection event triggered by the blank processing state change.

|  |  |  |
| --- | --- | --- |
| VID | Name | Description |
| 2032 | ProcessStateString | Additional Information |
| 2030 | PreviousProcessState | Processing State transitioned from |
| 2031 | ProcessState | Processing State transitioned to |

## Alarm State Model

### General Description

The alarm management capability provides for host notification and management of alarm conditions occurring on the equipment. This alarm management provides several useful tools.

* Reporting the time of an alarm state change.
* Uploading a list of alarm texts.
* Enabling and disabling the notification of specific alarms.
* Host query of alarms set and enabled status on the equipment.

An alarm is related to any abnormal situation on the equipment that may endanger people, equipment, or material being processed. Such abnormal situations are defined by the equipment manufacturer based on physical safety limitations. Equipment activities potentially impacted by the presence of an alarm are inhibited. Note that exceeding control limits associated with process tolerance do not constitute an alarm nor do normal equipment events such as the start or completion of processing.

### Alarms State Diagram



### Alarms State Definitions

#### ALARM CLEAR

The alarm is inactive. The situation is normal or safe.

#### ALARM SET

The alarm is active. The situation is abnormal or unsafe.

### Alarms State Transition Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Current | Trigger | New State | Action | Comment |
| 1 | ALARMn CLEAR | ALARMn is detected on the equipment. | ALARMn SET | Initiate local actions (if any) to ensure safety. Update “AlarmsSet and ALCDn values.” Generate and issue alarm message if enabled. | Inhibited activities require operator or host intervention prior to resuming. |
| 2 | ALARMn SET | ALARMn is no longer detected on the equipment. | ALARMn CLEAR | Update AlarmsSet and ALCDn values. Generate and issue alarm message if enabled. | Inhibited activities require operator or host intervention prior to resuming. |

### Related Variables, Constants and Events

For complete descriptions, refer to the Appendix.

|  |  |
| --- | --- |
| Name | Type |
| Aser | Status Variable |
| AlarmState | Status Variable |
| AlarmsEnabled | Status Variable |
| AlarmsSet | Status Variable |
| AlarmID | Data Variable |
|  |  |

# Machine Capabilities

## Establish Communications

### Purpose

Communications between host and equipment are formally established through use of the Establish Communications Request/Establish Communications Acknowledge transaction, S1, F13/F14.

### Description

There are potential problems when one side of the communications link fails and the other side does not detect it. From the point of view of the host, a loss of communications has many possible causes. In some cases, host-controlled settings on the equipment may need to be reset. In other cases, the equipment may have continued an automatic processing sequence during the period of no communication and may have changed states.

The equipment considers communications as formally established whenever either of the following conditions has been satisfied. Satisfaction of either of these conditions will result in a transition to the COMMUNICATING substate. See the Communications State Model for further detail.

* Communications Request has been sent to the host and an Establish Communications Acknowledge has been received within the transaction timeout period and with an acknowledge code of “Accept”, or
* Communications Request has been received from the host, and an Establish Communications Acknowledge response has been successfully sent with an acknowledge code of “Accept.”

When the equipment is attempting to establish communications, an Establish Communications Request is sent periodically until communications have been formally established as described above. The interval between attempts is user-configurable and begins as soon as a connection transaction failure is detected (see [Communications State Model](#_Communications_State_Diagram) ).

Attempting to establish communications is not a low-level connectivity issue, but rather a logical application issue used by either party to notify its partner that the host may need to perform synchronization activities with the equipment.

### Scenarios

#### Host Attempts to Establish Communications

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Establish Communications | S1, F13 🡺 |  |  |
|  |  |  | Communications state is enabled (any substate) |
|  |  | 🡸 S1, F14 | Reply COMMACK = Accept and Communications state = COMMUNICATING |

#### Equipment Attempts To Establish Communications and Host Acknowledges

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | Communications State = NOT COMMUNICATING |
|  |  | 🡸 S1, F13 | [LOOP]  [LOOP] – SEND  Establish Communications Request |
| Establish Communications Acknowledge | S1, F14 🡺 |  | [IF] S1, F14 received without timeouts  [THEN] exit loop – SEND  [ELSE] Delay for interval in EstablishCommunicationsTimeout  [ENDIF]  [END\_LOOP]–SEND  [IF] COMMACK = Accept  [THEN] Communications state =  Communicating  exit loop –  [ELSE] Reset timer for delay, and delay for interval specified in EstablishCommunicationsTimeout  [ENDIF]  [END\_LOOP] |

#### Simultaneous Attempts to Establish Communications

For equipment that supports interleaving, it is possible that either the host or equipment could send an Establish Communications Request before receiving the request from its partner. As communications are established by the successful acceptance of any one Establish Communications Request, it is immaterial who sends the request first. The roles of host and equipment may be reversed.

##### Equipment Receives S1, F14 From Host Before Sending S1, F14

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | Communications State = NOT COMMUNICATING |
|  |  | 🡸 S1, F13 | Establish Communications Request |
| Establish Communications Request | S1, F13 🡺 |  |  |
| Reply COMMACK = Accept | S1, F14 🡺 |  | S1, F14 received from Host and Communications established\* and Communications state = COMMUNICATING |
|  |  | 🡸 S1, F14 | Reply COMMACK = Accept\*\* |

##### Equipment Sends S1, F14 To Host Before Receiving S1, F14

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | Communications State = NOT COMMUNICATING |
|  |  | 🡸 S1, F13 | Establish Communications Request |
| Establish Communications Request | S1, F13 🡺 |  |  |
|  |  | 🡸 S1, F14 | Reply COMMACK = Accept\*  Communications established\*\* and Communications state = COMMUNICATING |
| Reply COMMACK = Accept | S1, F14 🡺 |  | S1, F14 received from Host |

Communications are established at the successful completion of the S1, F13/F14 transaction where COMMACK is set to zero.

\*\* Communications are established on the successful transmission of S1, F14, even if there is an open S1, F13.

## Data Collection

### Purpose

This capability allows the host to query for the equipment variables and is useful during initialization and synchronization.

### Detailed Description

The host may request a report containing data variables from the equipment by specifying the RPTID. It is assumed that the report has been previously defined (e.g. using the Define Report S2, F33 transaction; [S2, F33 Define Report (HI](#_S2,_F33_Define)). The values of any status variables (SV) and equipment constants (EC) contained within the report must be current. Discrete data values (DV) are only guaranteed to be valid upon the occurrence of a specific collection event.

### Scenarios

#### Host Requests Report

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host requests data variables contained in report RPTID | S6, F19  |  |  |
|  |  |  S6, F20 | Equipment responds with list of variable data for the given RPTID. |

### Dynamic Event Report Configuration

#### Purpose

This capability provides the data reporting flexibility required in some manufacturing environments. It allows the host to increase or decrease the data flow according to need. For example, if the performance of the equipment degrades, the data flow from that equipment may be increased to help diagnose the problem.

#### Detailed Description

The equipment supports the following event report configuration functionality through the SECS-II interface:

* Host definition/deletion of custom reports,
* Host linking/unlinking of defined reports to specified collection events, and
* Host enabling/disabling the reporting of specified collection events.

Note: The equipment may also supply alternative means for defining reports and linking reports to events (e.g. via the operator console). Implementation of alternate means is not required.

The equipment can be instructed by the host to enable or disable reporting of collection events on an individual or collective basis. A status variable – *EventsEnabled* (SVID = 2029) is available that consists of a list of enabled collection events.

Reports may be attached to an event report message (S6, F11). These reports are linked to the desired collection event. They typically contain variables relating to that event. The reported data in the event report messages might include status variables (SV), equipment constants (EC), or data variables (DV). Note that data variable values are only valid upon certain events and should be included only in reports linked to those events.

#### Scenarios

##### Collection Event Reporting Set-up

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Send report definitions | S2, F33 🡺 |  | DATAID, RPTID and VID received |
|  |  | 🡸 S2, F34 | DRACK\* = 0 the reports are OK |
| Link reports to events | S2, F35 🡺 |  | CEID and the corresponding RPTID are received |
|  |  | 🡸 S2, F36 | LRACK = 0 the event linkages are acceptable. |
| Enable specific collection events | S2, F37 🡺 |  | Enable/disable codes (CEED) and the respective event reporting CEID received. |
|  |  | 🡸 S2, F38 | ERACK = 0 OK, will generate the specified reports when the appropriate collection events happen. |

### Trace Data Collection

#### Purpose

Trace data collection provides a method of sampling data on a periodic basis. The time-based approach to data collection is useful in tracking trends or repeated applications within a time window, or monitoring of continuous data.

#### Detailed Description

The equipment establishes a trace report as instructed by the host (S2, F23). For a trace report (S6, F1) the host designates the following:

* Trace report identifier (TRID)
* Time interval for data sampling (DSPER)
* Total number of samples to be taken (TOTSMP)
* Number of samples per trace report (REPGSZ)
* Listing of which data will be sent with the report

The number of trace reports sent to the host is determined by total samples, divided by reporting group size (TOTSMP/REPGSZ).

The equipment samples the specified data at the interval designated by the host (DSPER) and sends a predefined trace report to the host for the specified reporting group size (REPGSZ). The trace report definition is automatically deleted from the equipment after the last trace report has been sent.

The host may modify or re-initiate a trace function currently in progress by specifying the same TRID in a trace request definition. At this point, the old trace is terminated and the new trace is initiated. The host may also instruct the equipment to terminate a trace report prior to its completion by specifying TOTSMP = 0 for that TRID, at which point the trace definition is deleted.

#### Scenarios

##### Host Initiates Trace Report

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Trace Data initialization requested | S2, F23  |  |  |
|  |  |  S2, F24 | Acknowledge, trace initiated  [DO] TOTSMP REPGSZ times  [DO] REPGSZ many times: collect SVID1…SVIDn data, delay time by DSPER.  [END DO] |
|  |  |  S6, F1 | Send SV1,…SVn |
| Acknowledge receipt | S6, F2  |  | [END DO] |
| Optional: Request trace termination prior to completion (TOTSMP = 0) | S2, F23  |  |  |
|  |  |  S2, F24 | Acknowledge premature termination |

### Status Data Collection

#### Purpose

This capability allows the host to query the equipment for selected status information and is useful in synchronizing with equipment status.

#### Detailed Description

The host may query equipment status by specifying the desired SVID. Upon such a request, the equipment sends the host the value of the selected status variables. The host also may request the description (name and units) of any or all status variables.

#### Scenarios

##### Request Equipment Status Report

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host requests report of selected status variable values. | S1, F3 🡺 |  |  |
|  |  | 🡸 S1, F4 | Equipment responds with the requested status variable data. |

##### Request Equipment Status Variable Namelist

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host requests equipment to identify selected status variables. | S1, F11 🡺 |  |  |
|  |  | 🡸 S1, F12 | Equipment responds with the requested status variable descriptions. |
|  |  |  |  |
|  |  |  |  |

## Alarm Management

### General Description

The alarm management capability provides for host notification and management of alarm conditions occurring on the equipment. This alarm management provides several useful tools.

* Reporting the time of an alarm state change.
* Uploading a list of alarm texts.
* Enabling and disabling the notification of specific alarms.
* Host query of alarms set and enabled status on the equipment.

An alarm is related to any abnormal situation on the equipment that may endanger people, equipment, or material being processed. Such abnormal situations are defined by the equipment manufacturer based on physical safety limitations. Equipment activities potentially impacted by the presence of an alarm are inhibited. Note that exceeding control limits associated with process tolerance do not constitute an alarm nor do normal equipment events such as the start or completion of processing.

### Scenarios

Note: Consult event-reporting sections of this document for descriptions of enabling, disabling, and sending collection event reports.

#### Enable/Disable Alarms

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Enable/Disable Alarm | S5, F3 🡺 |  |  |
|  |  | 🡸 S5, F4 | Acknowledge |

#### Send Alarm Report

Alarm occurrence detected by the equipment

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  | 🡸 S5, F1 | Send alarm report (if enabled) |
| Acknowledge | S5, F2 🡺 |  |  |
|  |  | 🡸 S6, F11 | Send event report (if enabled) |
| Acknowledge | S6, F12 🡺 |  |  |

## Remote Commands

### Purpose

Remote Control capability provides the host control over certain equipment operations.

### Description

The equipment responds to host commands that provide the following functions relative to individual equipment implementations:

|  |  |
| --- | --- |
|  |  |
| JobCreate | Machine Receives multiple S2F49 JobCreate commands, adds them all to a queue |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Remote commands are “request action be initiated” rather than “do action.” The equipment may then respond via S2F49 with HCACK = 4 if the command “is going to be performed.” This alleviates any transaction timeouts for commands that may take a long time to perform. The completion of the action initiated by the remote command (i.e., HCACK = 0 or 4) must result in either a state transition or other action that generates a collection event upon normal/abnormal completion. If the command is rejected the equipment will respond with HCACK=2 – Command cannot be performed.

The format for all remote commands is ASCII, with a maximum length of 20 characters. The character set is restricted to the printable characters (hexadecimal 21 through 7E). Note that spaces are not allowed.

### Scenarios

#### Host sends a remote command

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| **Host Command Send** | **S2, F49 ** |  |  |
|  |  | ** S2, F50** | **Host Command Acknowledge** |
|  |  | ** S6, F11** | **[IF] Command Accepted (HCACK = 4)**  **[THEN] State change or other collection event occurrence**  **[ELSE] Command Rejected (HCACK = 2)**  **Cannot perform command now ( due to command not supported for current processing state )** |
| **Event Report Acknowledge** | **S6, F12 ** |  |  |

## Equipment Constants

### Purpose

This capability provides a method for the host to read and to change the value of selected equipment constants on the equipment.

### Description

This capability allows the host to reconfigure equipment constants to support a variety of situations. Note that when the host changes an equipment constant’s value, the new value is not required to take effect immediately, although the equipment accepts the new value.

### Scenarios

#### Host Sends Equipment Constants

Allow the host to change the value of one or more equipment constants.

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host sends equipment constants | S2, F15 🡺 |  |  |
|  |  | 🡸 S2, F16 | EAC = 0 equipment sets constants |

#### Host Equipment Constants Request

Allow the host to determine the current value of equipment constants.

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host constant request | S2, F13 🡺 |  |  |
|  |  | 🡸 S2, F14 | Equipment constant data  (NOTE: This capability also can be accomplished using S2, F19 and S6, F20. |

#### Host Equipment Constant Namelist Request

Allow the host to retrieve basic information about the equipment constants available at the equipment.

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host constant namelist Request | S2, F29 🡺 |  |  |
|  |  | 🡸 S2, F30 | Equipment constant namelist |

#### Operator Changes Equipment Constant

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | Operator changes equipment constant at equipment operator console. |
|  |  | 🡸 S6, F11 | Equipment reports equipment constant change. |
| Host acknowledges event | S6, F12 🡺 |  |  |

## Process Recipe Management

### Purpose

Process program management provides a means to transfer process programs and to share the management of those process programs between the host and equipment.

### Description

A process program is the pre-planned and reusable set of instructions, settings, and parameters that determine the processing environment seen by the manufactured object.

Process programs allow the equipment’s process, and/or the parameters used by that process, to be set and modified by the engineer to achieve different results. Different process programs may be required for different products, while often the same process program will be used for all lots of a given product. The engineer must be able to create such programs, to modify current programs, and to delete programs from equipment storage.

For the host to ensure that the proper process programs are on the equipment there must be a means of transferring them from equipment to host and from host to equipment. The host also may need to delete process programs from the equipment’s storage to make room for a process program to be downloaded. In addition, the host must be kept informed whenever a local change occurs in the contents or status of a process program.

Unformatted process programs may be uploaded and downloaded. This capability provides for both host- and equipment-initiated transfers. The equipment-initiated transfer may be used at the request of the process engineer or operator of the equipment. If a process program exists with the same PPID as the one given in the SECS-II message, the old process program must be replaced. The PPID in the SECS-II message is used to identify the process program in non-volatile storage.

The equipment may deny overwriting or deleting a recipe if it is in use or affects the recipe in use.

### Scenarios

#### Program Created, Edited or Deleted by Operator

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | New process program created, edited or deleted by operator of equipment.  PPChangeName = PPID  PPChangeStatus  = 1 (Created)  = 2 (Edited)  = 3 (Deleted) |
|  |  |  | [IF] CEID for Process Program Change Event enabled  [THEN] |
|  |  | 🡸 S6, F11 | Send Event Report |
| Event Report Acknowledge | S6, F12 🡺 |  |  |

#### Process Program Deletion by Host

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Delete Process Program Send | S7, F17 🡺 |  |  |
|  |  | 🡸 S7, F18 | The process program is removed from non-volatile storage. Delete Process Program Acknowledge.  Acknowledge ( ACKC7)  0 = Accepted  1 = Permission not granted  2 = Length error  3 = Matrix overflow  4 = PPID not found  5 = Mode unsupported  6-63 Reserved |
| [IF] ACKC7 = ACCEPTED (0)  [THEN] |  |  |  |
|  |  |  | PPID will be deleted |
| [END\_IF] |  |  |  |

#### Process Program Directory Request

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Current EPPD Request | S7, F19 🡺 |  |  |
|  |  | 🡸 S7, F20 | Current EPPD Data |

#### Host-Initiated Process Program Upload – Unformatted

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Process Program Request | S7, F5 🡺 |  |  |
|  |  | 🡸 S7, F6\* | Process Program Data  \*If the process program does not exist, a zero-length list will be sent. |

#### Equipment-Initiated Process Program Upload – Unformatted.

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | [IF] Process program is multi-block  [THEN] |
|  |  | 🡸 S7, F1 | Process Program Load Inquire |
| Process Program Load Grant | S7, F2 🡺 |  |  |
|  |  |  | [END\_IF] |
|  |  | 🡸 S7, F3 | Process Program Send |
| Process Program Acknowledge | S7, F4 🡺 |  |  |

#### Host-Initiated Process Program Download – Unformatted

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| [IF] Process program is multi-block  [THEN] |  |  |  |
| Process Program Load Inquire | S7, F1\* 🡺 |  |  |
|  |  | 🡸 S7, F2 | Process Program Load Grant  \* S7, F1 should be used only to request permission to transfer a multi-block formatted or unformatted process program. It should not be used to select a process program for execution; the remote command PP\_SELECT should be used. |
| [END\_IF] |  |  |  |
| Process Program Send | S7, F3 🡺 |  |  |
|  |  | 🡸 S7, F4 | Process Program Acknowledge ( ACKC7)  0 = Accepted  1 = Permission not granted  2 = Length error  3 = Matrix overflow  4 = PPID not found  5 = Mode unsupported  6-63 Reserved |
| [IF] ACKC7 = ACCEPTED (0)  [THEN] |  |  |  |
|  |  | 🡸 S6, F11 | Recipe Validation Event |
| Event Report Acknowledge | S6F12🡺 |  |  |
| [END\_IF] |  |  |  |

#### Equipment-Initiated Process Program Download – Unformatted

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  | 🡸 S7, F5 | Process Program Request |
| Process Program Send | S7, F6 🡺 |  |  |
|  |  | 🡸 S6, F11 | Recipe Download Validation Event |
| Event Report Acknowledge | S6F12🡺 |  |  |

## Equipment Terminal Services

### Purpose

Equipment Terminal Services allows the factory operators to exchange information with the host from their equipment workstations.

### Detailed Description

The equipment is capable of displaying information passed to it by the host for the operator’s attention. The equipment has no responsibility for interpreting any of the data passed to or from the host using this method.

### Scenarios

#### Host sends information to an equipment’s display device and then overwrites the information before operator recognizes message

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host sends textual information to equipment for display to the operator on terminal x. | S10, F3 🡺 |  |  |
|  |  | 🡸 S10, F4 | Equipment acknowledges request to display text (equipment sets unrecognized message indicator). |

## Control

### Purpose

This section complements the Control State Model description ( [Control State Model](#_Control) ). It defines the requirements for implementation of this model.

### Description Control Configuration

The control state model has two areas of configuration. The first area is related to the default entry states of the state model. Upon system initialization, the system must activate either the ON-LINE or the OFF-LINE state. Upon entry to OFF-LINE, the system must in turn activate one of the substates of OFF-LINE (EQUIPMENT OFF-LINE, ATTEMPT ON-LINE, or HOST OFF-LINE). In both these cases, the user configures the equipment to make the choices appropriate to that factory. Entry to the ON-LINE state also involves a choice of substates. In this case, the equipment reads the front panel REMOTE/LOCAL switch to determine the appropriate state.

The second area of configuration involves the transition to be made if the ON-LINE attempt should fail. The model may be set to transition to either HOST OFF-LINE or to EQUIPMENT OFF-LINE should the S1, F1 transaction be terminated unsuccessfully. Choosing HOST OFF-LINE allows the host to cause the equipment to transition to ON-LINE when the host becomes ready. This is accomplished via the message S1, F17 (see below).

#### Changing Control State

In the control state model, both the operator and the host can affect the control state. The operator retains ultimate authority to set the equipment OFF-LINE by means of an OFF-LINE switch mechanism. The operator also can cause the equipment to attempt to go ON-LINE. Under some circumstances, the host can initiate the transition to ON-LINE.

If the operator requests to go ON-LINE, the equipment will send an S1, F1 to the host. The host may confirm ON-LINE with an S1, F2 or deny ON-LINE by sending an S1, F0. If there is no host response (i.e., reply timeout), the equipment treats it as a denial.

When the equipment is ON-LINE, the host may request that it transition to OFF-LINE. It transitions to the HOST OFF-LINE substate. When the equipment HOST OFF-LINE state is active, the host may request that it transition to ON-LINE. The combination of these two allows the host to cycle the equipment between ON-LINE and OFF-LINE.

Only the operator may change the ON-LINE substate (REMOTE or LOCAL).

### Scenarios

#### Host Accepts ON-LINE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | **Operator actuates ON-LINE switch when equipment OFF\_LINE state is active.** |
|  |  | ** S1, F1** | **Equipment request ON-LINE.** |
| **Host grants ON-LINE** | **S1, F2 ** |  |  |
|  |  | ** S6, F11** | **“Control State LOCAL (or REMOTE)” collection event.** |
| **Acknowledge** | **S6, F12 ** |  |  |

#### Host Denies ON-LINE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | **Operator actuates ON-LINE switch when equipment OFF\_LINE state is active.** |
|  |  | ** S1, F1** | **Equipment requests ON-LINE.** |
| **Host denies ON-LINE** | **S1, F0 ** |  |  |

#### Operator Sets OFF-LINE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | **Operator actuates OFF-LINE switch when equipment ON\_LINE state is active.** |
|  |  | ** S6, F11** | **“Equipment request OFF-LINE” event.** |
| **Acknowledge** | **S6, F12 ** |  |  |

#### Operator Sets REMOTE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | **Operator sets switch from LOCAL to REMOTE.** |
|  |  | ** S6, F11** | **“Control State REMOTE” event.** |
| **Acknowledge** | **S6, F12 ** |  |  |

#### Operator Sets LOCAL

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
|  |  |  | **Operator sets switch from REMOTE to LOCAL.** |
|  |  | ** S6, F11** | **“Control State LOCAL” event.** |
| **Acknowledge** | **S6, F12 ** |  |  |

#### Host Sets OFF-LINE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| **Host request OFF-LINE.** | **S1, F15 ** |  |  |
|  |  |  | **[IF] Equipment is OFF-LINE** |
|  |  | ** S1, F0** | **[THEN] Equipment does not process requests.** |
|  |  |  | **[ELSE] Equipment ON-LINE** |
|  |  | ** S1, F16** | **Equipment acknowledges request and transitions to OFF-LINE.** |
|  |  | ** S6, F11** | **“Equipment OFF\_LINE” event.** |
| **Acknowledge** | **S6, F12 ** |  |  |
|  |  |  | **[END\_IF]** |

#### Host Sets ON-LINE

|  |  |  |  |
| --- | --- | --- | --- |
| COMMENT | HOST | EQUIPMENT | COMMENT |
| Host requests ON-LINE | S1, F17  |  |  |
|  |  |  | **[IF] Equipment is HOST OFF-LINE state not active.** |
|  |  | ** S1, F18** | **[THEN] Equipment denies request (ONLACK = 0).** |
|  |  |  | **[ELSE] Equipment HOST OFF-LINE state is active.** |
|  |  | ** S1, F18** | **Equipment acknowledges request (ONLACK = 0).** |
|  |  | ** S6, F11** | **“Control state LOCAL (or REMOTE)” event.** |
| **Acknowledge** | **S6, F12 ** |  |  |
|  |  |  | **[END\_IF]** |

# Operational Flow

## Material Movement – Move In

## 

## Process Flow

### Recipe

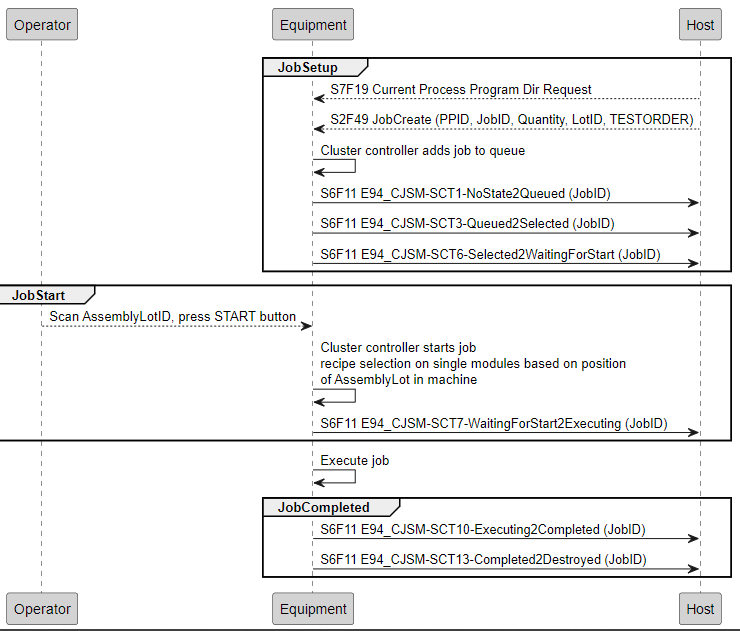
We have:

S7F19 Current Process Program Dir Request before starting the Job request sequence

The PPID to start is part of the Process Job request (see below)

### Create Process Job

Process Job is created with the S2F49 (EnhanceRemoteCommand) Request.



Example of parameters received for the S2F49 (Jop Creation)

S2F49 W-Bit=1 Device=0 SysBytes=0000000C

<L[2]

<A[9] "JobCreate">

<L[5]

<L[2]

<A[5] "JOBID">

<A[36] "RE149200TST\_064-50020220120132408515">

>

<L[2]

<A[8] "QUANTITY">

<A[4] "4000">

>

<L[2]

<A[4] "PPID">

<A[16] "M4954\_Testrecipe">

>

<L[2]

<A[13] "ASSEMBLYLOTID">

<A[8] "RE149200">

>

<L[2]

<A[9] "TESTORDER">

<L[32]

<A[1] "F">

<A[5] "BE3WX">

<A[8] "RE149200">

<A[7] "S\_Test1">

<A[4] "4000">

<A[10] "SACHNUMMER">

<A[9] "TEST-TAPE">

<A[8] "97010288">

<A[7] "S\_Test1">

<A[7] "0000000">

<A[4] "PROD">

<A[12] "PG-SSOM-2-11">

<A[4] "NULL">

<A[11] "M4954B00011">

<A[4] "NULL">

<A[4] "NULL">

<A[4] "NULL">

<A[0] "">

<A[32] "M4954\_TLE4954\_55\_IBB\_BE\_Flex\_RBG">

<A[14] "M4954AX32BX241">

<A[4] "2.41">

<A[6] "Ins001">

<A[2] "AT">

<A[2] "25">

<A[9] "TLE4954CB">

<A[2] "28">

<A[4] "99.5">

<A[7] "DEFAULT">

<A[3] "110">

<A[4] "30.0">

<A[0] "">

<A[0] "">

>

>

### Start

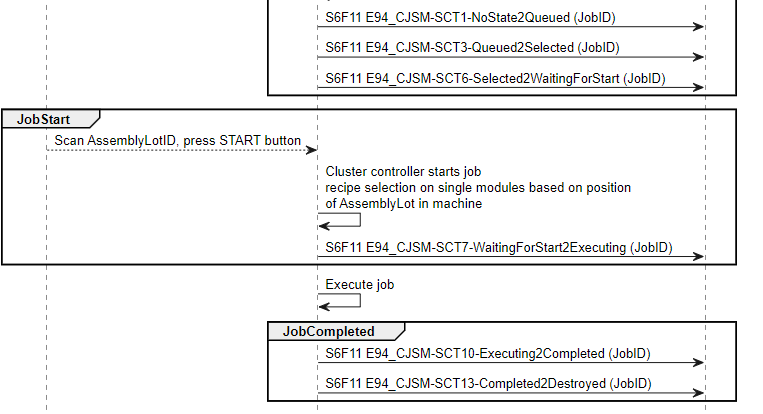
Machine Receives multiple S2F49 JobCreate commands, adds them all to a queue

Adding Jobs to the queue shall always be possible, Controlstate must be online/remote

Operator selects job to process by AssemblyLotID (Handheld scanner)

Operator presses START button to start processing of the job

E94 related notifications during job processing



## Material Movement – Move Out

### Material processing Completed

**LGA\_Consume\_End Report**

S6F11 LGA\_Consume\_End (This report shall be also available as file local stored on the machine PC and shown in operator GUI as soon as the S6F11 event is sent)

Event triggers:

-Machine stops consuming LGA Modules from LGA lot e.g. LGA lot fully consumed/empty

-Assembly Target Lot Size reached, LGA consume end

Send Collection event -> MaterialReport (8077)

Report content:

9088 MaterialReport\_LotName

9089 MaterialReport\_AssemblyLotID

9090 MaterialReport\_MaterialId

9091 MaterialReport\_MaterialConsumption

9092 MaterialReport\_LGARejects

**AssemblyLotFinished Report**

S6F11 AssemblyLotFinished (This report shall be also available as file local stored on the machine PC and shown in operator GUI as soon as the S6F11 event is sent)

Fails from tester are added to one specific RejectLossCode (no additional loss if also bad AOI result)

TBD: AssemblyLotRejectLossCodes

Event trigger:

-Machine has finished production of current Assemblylot withing current Job

Send Collection event -> LotCompleted (8063)

Report content available Data in DV variables:

9077 LotCompleted\_Name

9078 LotCompleted\_Count

9079 LotCompleted\_Product

9080 LotCompleted\_BadCount

9081 LotCompleted\_GoodCount

9082 LotCompleted\_Yield

9083 LotCompleted\_StartTime

9084 LotCompleted\_EndTime

9085 LotCompleted\_AssemblyLotID

9086 LotCompleted\_AssemblyLotQty

9087 LotCompleted\_AssemblyLotRejects

As LotCompleted\_AssemblyLotRejects has a variable content the data is in xml format with as many entries as provided by the machine:

Example:

<AssemblyLotRejects>

<AssemblyLotRejectLossCode\_1>93</AssemblyLotRejectLossCode\_1>

<AssemblyLotRejectLossQty\_1>4</AssemblyLotRejectLossQty\_1>

<AssemblyLotRejectLossCode\_2>149</AssemblyLotRejectLossCode\_2>

<AssemblyLotRejectLossQty\_2>20</AssemblyLotRejectLossQty\_2>

<AssemblyLotRejectLossCode\_3>148</AssemblyLotRejectLossCode\_3>

<AssemblyLotRejectLossQty\_3>20</AssemblyLotRejectLossQty\_3>

…

</AssemblyLotRejects>

## APC Parameter

### APC Data Transfer to host

APC Parameter changes are sent via CE event **8050**:

8050 VariableChanged Event triggered on VariableChanged received from equipment

Assigned to the event are the following DV IDs

9096 VariableChanged\_Name A VariableChangedName returned

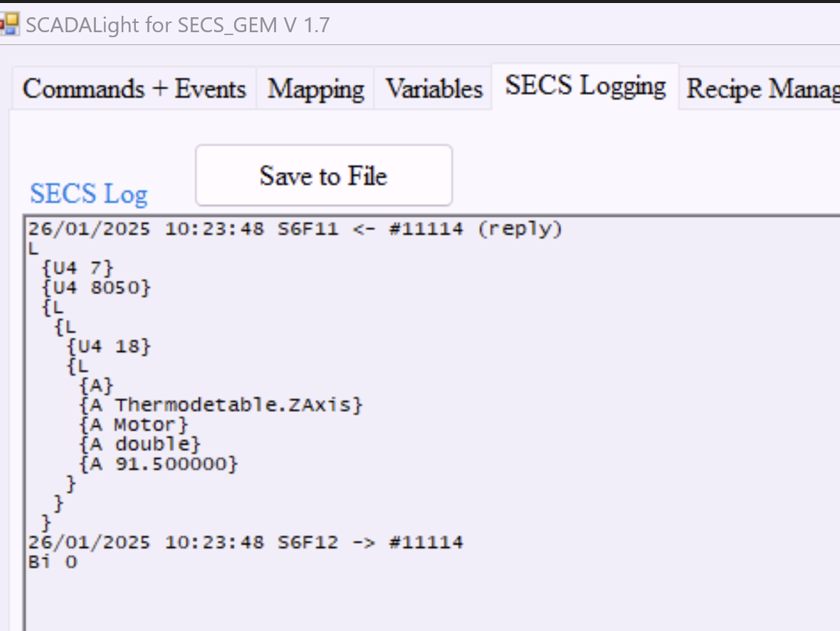
9097 VariableChanged\_ObjectType A VariableChangedObjectType returned

9098 VariableChanged\_DataType A VariableChangedDataType returned

9099 VariableChanged\_Value A VariableChangedValue returned

The host is required to define a corresponding report and assign it to the VariableChanged event.

Example (from simulation):



9096 VariableChanged\_Name -> Thermodetable.ZAxis

9097 VariableChanged\_ObjectType -> Motor

9098 VariableChanged\_DataType -> double

9099 VariableChanged\_Value -> 91.500000

# SECS-II Message Summary

## Control State Dependency

The equipment’s Control State Model, as described on page **Error! Bookmark not defined.**, determines the availability of most SECS-II message communication. If the host sends an unavailable SECS-II message while the equipment is off-line, then the equipment will respond with a respective Sx, F0 message.

|  |  |
| --- | --- |
| Control State | Description |
| On-line L, R | On-line local or remote |
| Any | Any control state |
| Off-line | Off-line equipment, host or on-line Attempt. It may be accepted while on-line, but has no meaning. |
| On-line R | On-line remote |

## Host Initiated

This section lists primary, host initiated SECS-II messages supported by the equipment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Primary | Reply | Notes | Control State | Primary Description |
| S1, F1 | S2, F2 |  | On-line L, R | Are you there request |
| S1, F3 | S1, F4 |  | On-line L, R | Selected equipment status request |
| S1, F11 | S1, F12 |  | On-line L, R | Status variable name-list request |
| S1, F13 | S1, F14 |  | Any | Establish communication request |
| S2, F13 | S2, F14 |  | On-line L, R | Equipment constant request |
| S2, F15 | S2, F16 |  | On-line L, R | New equipment constant send |
| S2, F33 | S2, F34 |  | On-line L, R | Define report |
| S2, F35 | S2, F36 |  | On-line L, R | Link event report |
| S2, F37 | S2, F38 |  | On-line L, R | Enable/disable event report |
| S2, F39 | S2, F40 |  | On-line L, R | Multi-block inquire |
| S2, F41 | S2, F42 |  | On-line R | Host command send |
| S5, F3 | S5, F4 |  | On-line L, R | Enable/Disable Alarms |
| S5, F5 | S5, F6 |  | On-line L, R | List Alarm Request |
| S7, F1 | S7, F2 |  | On-line L, R | Process program load inquire |
| S7, F3 | S7, F4 |  | On-line L, R | Process program send |
| S7, F5 | S7, F6 |  | On-line L, R | Process program request |
| S7, F17 | S7, F18 |  | On-line L, R | Delete process program send |
| S7, F19 | S7, F20 |  | On-line L, R | Current EPPD request |
| S7, F23 | S7, F24 |  | On-line L, R | Formatted Process program send |
| S10, F3 | S10, F4 |  | On-line L, R | Terminal display, single |

## Equipment Initiated

This section lists primary, equipment initiated SECS-II messages supported by the equipment.

|  |  |  |  |
| --- | --- | --- | --- |
| Primary | Reply | Notes | Primary Description |
| Sx, F0 | none |  | Host primary reject since control state is off-line |
| S1, F1 | S2, F2 |  | Are you there request |
| S1, F13 | S1, F14 |  | Establish communication request |
| S5, F1 | S5, F2 | W5 | Alarm report send |
| S6, F11 | S6, F12 | W6 | Event report send |
| S7, F1 | S7, F2 |  | Process program load inquire |
| S7, F3 | S7, F4 |  | Process program send |
| S7, F5 | S7, F6 |  | Process program request |
| S7, F25 | S7, F26 |  | Formatted Process program request |
| S9, F1 | none |  | Unrecognized device ID |
| S9, F3 | none |  | Unrecognized stream type |
| S9, F5 | none |  | Unrecognized function type |
| S9, F7 | none |  | Illegal data |
| S9, F9 | none |  | Transaction timer timeout |
| S9, F11 | none |  | Data too long |
| S9, F13 | none |  | Conversation timeout |
| S12F1 | S12F2 |  | Map Set-up Data Send |
| S12F3 | S12F4 |  | Map Set-up Data |
| S12F5 | S12F6 |  | Map Transmit Inquire/Grant |
| S12F9 | S12F10 |  | Map Data Send Type 2 |
| S12F15 | S12F16 |  | Map Data Type 2 |
| S14,F1 | S14,F2 |  | Request E142 map data |

# Streams and Functions

The sections below describe the subset of SECS-II message streams and their included functions that are supported by the interface. It can be seen that the odd numbered functions within each stream are requests and the subsequent, even numbered functions are the corresponding response.

|  |  |
| --- | --- |
| Symbol | Description |
| H⬄E | Host to equipment or equipment to host |
| H🡨E | Equipment to host only |
| H🡪E | Host to equipment only |

## Stream 1: Equipment Status

### S1, F1 Are You There Request (H⬄E)

Function establishes that the SECS-II link is operational and that the host and machine are on-line. The machine responds with its model number and software revision. The host responds with a null list. The machine periodically sends this message as a ``heartbeat’’ for the SECS-II communications link.

Header only

### S1, F1 On-line Data (H🡨E)

L, 2

1. <A MDLN>

2. <A SOFTREV>

### S1, F2 On-line Data (H🡪E)

L, 0

### S1, F3 Selected Equipment Status Request (H🡪E)

Function requests the values of certain status variables in a predefined order.

L, n

1. <U4 SVID>

…

n. <U4 SVID>

* A zero-length list or item means report all SVID.

### S1, F4 Selected Equipment Status Data (H🡨E)

L, n

1. <\* SV>

n. <\* SV>

A, Bi, Bo, F4, F8, L, I1, I2, I4, U1, U2, U4

* A zero-length U1 for SV means that the SVID does not exist.

### S1, F11 Status Variable Namelist Request (H🡪E)

A request from the host to the machine to report the name and units of certain status variables, in the order requested.

L, n

1. <U4 SVID>

…

n. <U4 SVID>

* A zero-length means report all SVID.

### S1, F12 Status Variable Namelist Reply (H🡨E)

L, n

1. L, 3

1. <U4 SVID>

2. <A SVNAME>

3. <A UNITS>

…

n. L, 3

1. <U4 SVID>

2. <A SVNAME>

3. <A UNITS>

### S1, F13 Establish Communications Request (H🡪E)

Initiate an attempt to establish a SECS-II communications link at a logical level on power-up or after a break in the link. It is the first message sent after either of the above conditions.

L, 0

### S1, F14 Establish Communications Request Acknowledge (H🡪E)

L, 2

1. <Bi COMMACK>

2. L, 0

### S1, F13 Establish Communications Request (H🡨E)

Initiate an attempt to establish a SECS-II communications link at a logical level on power-up or after a break in the link. It is the first message sent after either of the above conditions. If no response is received from the host, the machine will periodically send a S1F13 message until a S1F14 with the correct COMMACK is received.

L, 2

1. <A MDLN>

2. <A SOFTREV>

### S1, F14 Establish Communications Request Acknowledge (H🡨E)

L, 2

1. <Bi COMMACK>

2. L, 2

1. <A MDLN>

2. <A SOFTREV>

## Stream 2: Equipment Control and Diagnostics

### S2, F13 Equipment Constant Request (H🡪E)

Function requests the values of certain equipment constants in a predefined order.

L, n

1. <U4 ECID>

…

n. <U4 ECID>

* A zero-length list or item means report all ECID.

### S2, F14 Equipment Constant Data (H🡨E)

L, n

1. <\* ECV>

…

n. <\* ECV>

A, Bi, Bo, F4, F8, I1, I2, I4, U1, U2, U4

* A zero-length U1 ECV means that ECID does not exist.

### S2, F15 New Equipment Constant Send (H🡪E)

Host updates the values of specified EC. If the host returns a non-zero EAC the machine cannot alter the value of any ECID specified in the S2F15 body.

L, n

1. L, 2

<U4 ECID>

<\* ECV>

…

n. L, 2

<U4 ECID>

<\* ECV>

A, Bi, Bo, F4, F8, I1, I2, I4, U1, U2, U4

### S2, F16 New Equipment Constant Acknowledge (H🡨E)

<Bi EAC>

### S2, F33 Define Report (H🡪E)

Function requests to define a group of event reports. One or more Report IDs is specified, each containing a list of variable IDs to be included in the report.

L, 2

1. <U4 DATAID>

2. L, a

1. L, 2

1. <U4 RPTID>

2. L, b

1. <U4 VID>

…

1. <U4 VID>

…

a. L, 2

1. <U4 RPTID>

2. L, c

1. <U4 VID>

…

1. <U4 VID>

* A zero-length list following DATAID deletes all report definitions and associated links. See S2, F35.
* A zero-length list following RPTID deletes report type RPTID. All CEID links to this RPTID are also deleted.

### S2, F34 Define Report Acknowledge (H🡨E)

<Bi *DRACK*>

### S2, F35 Link Event Report (H🡪E)

The host links Report IDs (RPTID) to Collection event IDs (CEID). These linked event reports default to “disabled” upon linking. That is, the occurrence of an event would not cause the report to be sent until enabled. See S2, F37 for enabling events.

L, 2

1. <U4 DATAID>

2. L, a

1. L, 2

1. <U4 CEID>

2. L, b

1. <RPTID>

…

1. <RPTID>

…

a. L, 2

1. <CEID>

2. L, c

1. <RPTID>

…

1. <RPTID>

* A zero-length list following CEID deletes all report links to that event.

### S2, F36 Link Event Report Acknowledge (H🡨E)

<Bi LRACK>

### S2, F37 Enable/Disable Event Report (H🡪E)

Host requests to enable or disable reporting for a list of Collection events (CEID).

L, 2

1. <Bo CEED>

2. L, n

1. <U4 CEID>

…

n. <U4 CEID>

* A zero-length list means all CEID.

### S2, F38 Enable/Disable Event Report Acknowledge (H🡨E)

<Bi *ERACK*>

### S2, F39 Host Command Send (H🡪E)

**If a S2,F23, S2,F33, S2,F35, S2,F45, or S2,F49 message is more than one block, this transaction must precede the message.**

**L,2**

**1. <DATAID>**

**2. <DATALENGTH>**

### S2, F40 Multi-block Grant (DMBG) (H🡨E)

Grant permission to send multi-block message.

<GRANT>

### S2, F41 Host Command Send (H🡪E)

The host sends a command to the machine for execution with the relevant parameters. Following remote commands are currently supported.

### S2, F42 Host Command Acknowledge (H🡨E)

L, 2

1. <HCACK>

2. L, n

1. L, 2

1. <A CPNAME>

2. <Bi CPACK>

…

n. L, 2

1. <Bi CPNAME>

2. <A CPACK>

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

## Stream 5: Exception Reporting

### S5, F1 Alarm Report Send (H🡨E)

This message reports a change in a defined alarm. Thus, both setting and clearing an alarm will have distinct alarms.

L, 3

1. <Bi ALCD>

2. <U4 ALID>

3. <A ALTX>

### S5, F2 Alarm Report Acknowledge (H🡪E)

<Bi ACKC5>

### S5, F3 Enable/Disable Alarm Send (H🡪E)

This message enables or disables an alarm from being reported to the host. Some alarms (safety related) are not controllable in this way.

L, 2

1. <Bi ALED>

2. <U4 ALID>

* A zero-length item for ALID means all alarms.

### S5, F4 Enable/Disable Alarm Acknowledge (H🡨E)

<Bi ACKC5>

### S5, F5 List Alarms Request (H🡪E)

The host requests the machine to send information on currently defined alarms.

L, n

1. <U4 ALID>

…

n. <U4 ALID>

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

### S5, F6 List Alarms Data (H🡨E)

This message contains the alarm data known to the equipment. There are “m” alarms in the list.

L, m

1. L, 3

1. <Bi ALCD>

2. <U4 ALID>

3. <A ALTX>

…

m. L, 3

1. <Bi ALCD>

2. <U4 ALID>

3. <A ALTX>

* If m = 0, no response can be made. A zero-length item returned for ALCD or ALTX means that value does not exist.

## Stream 6: Data Collection

### S6, F11 Event Report Send (H🡨E)

The machine sends a defined, event linked and enabled group of reports to the host on a linked event. This is a message that possibly requires a preceding S6, F5/F6 multi-block enquire/grant transaction.

L, 3

1. <U4 DATAID>

2. <U4 CEID>

3. L, a

1. L, 2

1. <U4 RPTID>

2. L, b

1. <\*V>

…

1. <\*V>

…

a. L, 2

1. <U4 RPTID>

2. L, c

1. <\*V>

…

1. <\*V>

A, Bi, Bo, F4, F8, L, I1, I2, I4, U1, U2, U4

* 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.

### S6, F12 Event Report Acknowledge (H🡪E)

<Bi ACKC6>

## Stream 7: Process Program Management

### S7, F1 Process Program Load Inquire (H⬄E)

This message is used to initiate the transfer of a process program.

L, 2

1. <A PPID>

2. <U4 LENGTH>

### S7, F2 Process Program Load Grant (H⬄E)

<Bi PPGNT>

### S7, F3 Process Program Send (H⬄E)

The purpose of this message is to send the process program.

L, 2

1. <A PPID>

2. <Bi PPBODY>

### S7, F4 Process Program Acknowledge (H⬄E)

<Bi ACKC7>

### S7, F5 Process Program Request (H⬄E)

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

<A PPID>

### S7, F6 Process Program Data (H⬄E)

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

L, 2

1. <A PPID>

2. <Bi PPBODY>

* A zero-length list means request denied.

### S7, F17 Delete Process Program Send (H🡪E)

This message is used by the host to request the deletion of a process program.

L, n

1. <A PPID>

…

n. <A PPID>

### S7, F18 Delete Process Program Acknowledge (H🡨E)

<Bi ACKC7>

### S7, F19 Current EPPD Request (H🡪E)

This message is used by the host to request the name of the process program directory (EPPD) in use.

Header only

### S7, F20 Current EPPD Data (H🡨E) L, n

1. <PPID>

…

n. <PPID>

### S7F, 23 Formatted Process Program Send (H⬄E)

This message allows movement of formatted process programs between a piece of equipment and its host system. The values of

MDLN and SOFTREV are obtained from the PCD used to generate the process program. If S7,F23 is multi-block, it must be preceded by the S7F1/F2 Inquire/Grant transaction.

L,4

1. <PPID>

2. <MDLN>

3. <SOFTREV>

4. L,c (c = Number of Process Commands)

1. L,2

1. <CCODE>

2. L,p (p = Number of Parameters)

1. <PPARM1>

.

.

p. <PPARMp>

2. L,2

.

.

* + 1. L,2

### S7, F24 Formatted Process Program ACKNOWLEDGE (H⬄E)

Acknowledges reception of a formatted process program at its destination and whether the process program was accepted by the

interpreter. A returned status of “accepted” by the interpreter means only that the message is understood. The validity of the contents of the process program is determined through a separate transaction (S7,F27/S7,F28).

<ACKC7>

### S7, F25 Formatted Process Program Request (H⬄E)

This message is used by either equipment or host to request a particular process program from the other.

<PPID>

## Stream 9: System Errors

### S9, F1 Unrecognized Device ID (H⬄E)

Device ID specified in block header is not defined in the machine.

<Bi MHEAD>

### S9, F3 Unrecognized Stream Type (H⬄E)

Machine does not recognize the stream type in the message block header.

<Bi MHEAD>

### S9, F5 Unrecognized Function Type (H🡨E)

Machine does not recognize the function type in the message block header.

<Bi MHEAD>

### S9, F7 Illegal Data (H🡨E)

This error signifies that the stream and function were correctly interpreted but the associated data was not.

<Bi MHEAD>

### S9, F9 Transaction Timer Timeout (H🡨E)

This error specifies that a transaction / receive timer has timed out and the transaction aborted. The host system should respond to this message in a suitable manner to keep the system operational.

<Bi SHEAD>

### S9, F11 Data Too Long (H🡨E)

The machine has been sent more data than it can handle.

<Bi MHEAD>

### S9, F13 Conversation Timeout (H🡨E)

Machine informs host that data was expected, but none was received within time period given.

L, 2

1. <A MEXP>

2. <A EDID>

## Stream 10: Terminal Services

### S10, F3 Terminal Display (Single) (H🡪E)

The host requests a text message be displayed on the machine.

L, 2

1. <Bi TID>

2. <A TEXT>

### S10, F4 Terminal Display (Single) Acknowledge (H🡨E)

<Bi ACKC10>

## Stream 14: E142 Map Request

### S14, F1 GetAttr Request (H🡨E)

L, 5

1. <A *OBJSPEC*>

2. <A OBJTYPE=’E142Substrate’>

3. L, i

1. <A *OBJID1=’FrameID*> //note Frame ID

4. L, 1

1. L, 3

1. <ATTRID=’SubstrateType’>

2. <ATTRDATA1=’Wafer’>//Note will be “Tray” for tray map request

3. <ATTRRELN=0>

5. L,1

1. <ATTRID=’MapData’>

### S14, F2 GetAttr Data (H🡪E)

L,2

1. L,1
2. L,2
3. L,1
4. L,2

1.<ATTRID=’MapData’>

2. <ATTRDATA=’

//Map

’>

# Data Item Definition Table

|  |  |  |
| --- | --- | --- |
| Variable | Description | Values |
| ABS | Any binary string |  |
| ACKC6 | Acknowledge code | 0 = Accepted  > 0 = Error, not accepted  1-63 Reserved |
| ACKC7 | Acknowledge code | 0 = Accepted  1 = Permission not granted  2 = Length error  3 = Matrix overflow  4 = PPID not found  5 = Mode unsupported  6-63 Reserved |
| ACKC10 | Acknowledge code | 0 = Accepted for display  1 = Message will not be displayed  2 = Terminal not available  3-63 Reserved |
| ALCD | Alarm code byte | bit 8 = 1 Alarm set  bit 8 = 0 Alarm clear  bit 7-1 Alarm category, not used |
| ALED | Alarm enable/disable code | bit 8 = 1 Enable alarm  bit 8 = 0 Disable alarm |
| ALID | Alarm identification |  |
| ALTX | Alarm text limited to 40 characters |  |
| CEED | Collection event enable/disable code | FALSE = Disable  TRUE = Enable |
| CEID | Collected event ID |  |
| COMMACK | Establish communications acknowledge code | 0 = Accepted  1 = Denied  2-63 Reserved |
| CPACK | Command parameter acknowledge code | 1 = Parameter Name (CPNAME does not exist  2 = Illegal value specified for CPVAL  3 = Illegal format specified by CPVAL  >3 Other equipment-specific error  4-63 Reserved |
| CPNAME | Command parameter name |  |
| CPVAL | Command parameter value |  |
| DATAID | Data ID |  |
| DATALENGTH | Total bytes to be sent |  |
| DRACK | Define report acknowledge code | 0 = Accept  1 = Denied, insufficient space  2 = Denied, invalid format  3 = Denied, at least one RPTID already defined  4 = Denied, at least VID does not exist.  >4 Other errors  5-63 Reserved |
| DSPER | Data sample period | hhmmss, 6 bytes |
| EAC | Equipment acknowledge code | 0 = Acknowledge  1 = Denied, At least one constant does not exist.  2 = Denied, busy  3 = Denied, at least one constant out of range.  >3 Other equipment-specific error  4-63 Reserved |
| ECDEF | Equipment constant default value |  |
| ECID | Equipment constant ID |  |
| ECMAX | Equipment constant maximum value |  |
| ECMIN | Equipment constant minimum value |  |
| ECNAME | Equipment constant name |  |
| ECV | Equipment constant value |  |
| EDID | Expected data identification | Possible responses:  MEXP EDID EDID  S07F03 <PPID> A[16] |
| ERACK | Enable/disable event report | 0 = Accepted  1 = Denied  >1 Other errors  2-63 Reserved |
| FCNID | Function identification |  |
| GRANT | Grant code | 0 = Permission granted  1 = Busy, try again  2 = No space available  3 = Duplicate DATAID  >3 Equipment specific error code  4-63 Reserved |
| GRANT6 | Permission to send | 0 = Permission granted  1 = Busy, try again  2 = Not interested  >2 Other errors  3-63 Reserved |
| HCACK | Host command parameter acknowledge code | 0 = Acknowledge  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  5 = Rejected, already in the desired condition  6 = No such object exists  7-63 Reserved |
| LENGTH | Length of the service program or process program in bytes |  |
| LIMITACK | Acknowledgment code for variable limit attribute set | 1 = LIMITID does not exist  2 = UPPERDB > LIMITMAX  3 = LOWERDB < LIMITMIN  4 = UPPERDB < LOWERDB  5 = Illegal format specified for UPPERDB or LOWERDB  6 = ASCII value cannot be translated to numeric  7 = Duplicate limit definition for this variable  >7 Other equipment-specific error  8-63 Reserved |
| LIMITID | The identifier of a specific limit in the set of limits (as defined by UPPERDB and LOWERDB) for a variable to which the corresponding limit attributes refer |  |
| LIMITMAX | The maximum allowed value for the limit values of a specific variable. The equipment manufacturer should specify this value, which would typically coincide with the maximum value of the variable being monitored. The format must match that of the referenced variable. |  |
| LIMITMIN | The minimum allowed value for the limit values of a specific variable. The equipment manufacturer should specify this value, which would typically coincide with the minimum value of the variable being monitored. The format must match that of the referenced variable. |  |
| LOWERDB | A variable limit attribute, which defines the lower boundary of the dead-band of a limit. The value applies to a single limit (\*LIMITID) for a specified VID. Thus, UPPERDB and LOWERDB as a pair define a limit. |  |
| LRACK | Link report acknowledge code | 0 = Accepted  1 = Denied, Insufficient space  2 = Denied, Invalid format  3 = Denied, At least one CEID link already defined  4 = Denied, At least one CEID does not exist  5 = Denied, At least one RPTID does not exist  >5 Other errors  6-63 Reserved |
| LVACK | Variable limit definition, acknowledge code. Defines the error with limit attributes for the reference VID. | 1 = Variable does not exist  2 = Variable has no limits capability  3 = Variable repeated in message  4 = Limit value error as described in LIMITACK  5-63 Reserved |
| MDLN | Equipment Model Type, 6 bytes max |  |
| MEXP | Message expected | SXX, FYY  X = stream  Y = function |
| MHEAD | SECS message block header associated with message block in error |  |
| OFLACK | Acknowledge code for OFF-LINE request | 0 = OFF-LINE Acknowledge  1-63 Reserved |
| ONLACK | Acknowledge code for ON-LINE | 0 = ON-LINE Accepted  1 = ON-LINE Not Allowed  2 = Equipment Already ON-LINE  3-63 Reserved |
| PPBODY | Process program body |  |
| PPGNT | Process program grant status | 0 = OK  1 = Already have  2 = No space  3 = Invalid PPID  4 = Busy, try later  5 = Will not accept  >5 Other error  6-63 Reserved |
| PPID | Process program ID |  |
| REPGSZ | Reporting group size |  |
| RPTID | Report ID |  |
| RSDA | Request spool data acknowledge | 0 = OK  1 = Denied, busy, try later  2 = Denied, spooled data does not exist  3-63 Reserved |
| RSDC | Request spool data code | 0 = Transmit spooled messages  1 = Purge spooled messages  2-63 Reserved |
| RSPACK | Reset spooling acknowledge | 0 = Acknowledge, spooling setup accepted  1 = Spooling setup rejected  2-63 Reserved |
| SHEAD | Stored header related to the transaction timer |  |
| SMPLN | Sample number |  |
| SOFTREV | Software revision code 6 bytes maximum |  |
| STIME | Sample time | same as TME |
| STRID | Stream identification |  |
| SV | Status variable value |  |
| SVID | Status variable ID |  |
| SVNAME | Status variable name |  |
| TEXT | A single line of characters. |  |
| TIAACK | Equipment acknowledgment code | 0 = Everything correct  1 = Too many SVID  2 = No more traces allowed  3 = Invalid period  >3 Equipment-specific error  4-63 Reserved |
| TIACK | Time acknowledge code | 0 = OK  1 = Error, not done  2-63 Reserved |
| TID | Terminal number |  |
| TIME | Time of day | If 12 bytes the format is YYMMDDhhmmss  YY = year 00 to 99  MM = month 01 to 12  DD = day 01 to 31  hh = hour 00 to 23  mm = minute 00 to 59  ss = second 00 to 59  If 16 bytes the format is YYYYMMDDhhmmsscc  YYYY = year 0000 to 9999  MM = month 01 to 12  DD = day 01 to 31  hh = hour 00 to 23  mm = minute 00 to 59  ss = second 00 to 59  cc = centisecond 00 to 99 |
| TOTSMP | Total samples to be made |  |
| TRID | Trace request ID |  |
| UNITS | Units Identifier |  |
| UPPERDB | A variable limit attribute that defines the upper boundary of the dead-band of a limit. The value applies to a single limit (LIMITID) for a specified VID. Thus, UPPERDB and LOWERDB as a pair define a limit. |  |
| V | Variable data |  |
| VID | Variable ID |  |
| VLAACK | Variable Limit Attribute Acknowledge Code | 0 = Acknowledge, command will be performed.  1 = Limit attribute definition error  2 = Cannot perform now  >2 Equipment-specific error  3-63 Reserved |

A, Bi, Bo, F4, F8, I1, I2, I4, U1, U2, U4

# All Definitions

## All Collection Events

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CEID** | **Event Name** | **Description** | **Associated DataVariables** | **Associated Data Variable IDs** |
| 0 | ControlStateLocal | Control State Machine switched to local (operator) control. |  |  |
| 1 | ControlStateRemote | Control State Machine switched to remote (host) control. |  |  |
| 2 | EquipmentOffline | Control State Machine switched to the offline state by the machine operator. |  |  |
| 3 | MaterialReceived | Material arrived from a port on the equipment. |  |  |
| 4 | MaterialRemoved | Material was sent from a port on the equipment. |  |  |
| 5 | MessageRecognition | Machine operator recognized the terminal service message from the host. |  |  |
| 6 | OperatorCommandIssued | Machine operator issued a control command. | OperatorCommand | 6 |
| 7 | PPChange | A process program (recipe) has been created changed or deleted. | PPChangeName  PPChangeStatus | 3  4 |
| 8 | PPSelected | A new process program (recipe) has been accepted. Either the host or machine operator has selected the recipe. | ProcessStateString  PPBodyIsValid | 2032  112 |
| 9 | ProcessingCompleted | Normal exit of EXECUTING state as part of the Processing State Machine. | PreviousProcessState | 2030 |
| 10 | ProcessingStarted | Normal exit of EXECUTING state as part of the Processing State Machine. | PreviousProcessState | 2030 |
| 11 | ProcessingStateChange | The state of the Processing State Machine has changed. | PreviousProcessState  ProcessState | 2030  2031 |
| 12 | ProcessingStopped | A previously requested STOP command has been performed. | PreviousProcessState | 2030 |
| 16 | ECChange | An equipment constant value was changed locally by the operator. | ECID  ECChangeName  ECChangeValue | 7  2052  2053 |
| 18 | HostCommandAccepted | A host remote command was accepted. | HostCmdName  HostCmdHostID | 10  11 |
| 19 | HostECChange | A host changed an equipment constant (EC) value. | HostECHostID  HostECID  ECID | 8  9  7 |
| 20 | HostPPChange | A host changed a Process Program. | HostPPChangeName  HostPPChangeStatus  HostPPChangeHostID | 12  13  14 |
| 21 | PPVerificationFailed | Recipe Verification Failed | PPError | 2010 |
| 410 | REMOTECMDEVENT\_QUERY\_TRAYMAPLIST | Event triggered if remote cmd QUERY\_TRAYMAPLIST accepted | TRAYMAPLIST | 6010 |
| 411 | REMOTECMDEVENT\_QUERY\_WAFERMAPLIST | Event triggered if remote cmd QUERY\_WAFERMAPLIST accepted | WAFERMAPLIST | 6011 |
| 412 | REMOTECMDEVENT\_UPLOAD\_TRAYMAP | Event triggered if remote cmd UPLOAD\_TRAYMAP accepted | UPLOAD\_TRAYMAP | 6012 |
| 413 | REMOTECMDEVENT\_UPLOAD\_WAFERMAP | Event triggered if remote cmd UPLOAD\_WAFERMAP accepted | UPLOAD\_WAFERMAP | 6013 |
| 414 | REMOTECMDEVENT\_QUERY\_TRAYMAPLIST\_FAILED | Event triggered if remote cmd QUERY\_TRAYMAPLIST not accepted |  |  |
| 415 | REMOTECMDEVENT\_QUERY\_WAFERMAPLIST\_FAILED | Event triggered if remote cmd QUERY\_WAFERMAPLIST not accepted |  |  |
| 416 | REMOTECMDEVENT\_UPLOAD\_TRAYMAP\_FAILED | Event triggered if remote cmd UPLOAD\_TRAYMAP not accepted |  |  |
| 417 | REMOTECMDEVENT\_UPLOAD\_WAFERMAP\_FAILED | Event triggered if remote cmd UPLOAD\_WAFERMAP accepted |  |  |
| 503 | ProcessingState\_Aborted | Event triggered when the Tool transitions from ABORTING to ABORTED as the result of an ABORT command | ProcessStateString  PreviousProcessState  ProcessState  AbortedBinCode | 2032  2030  2031  5536 |
| 504 | ProcessingState\_IDLE | Event triggered when Tool transitions to the IDLE state | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 505 | ProcessingState\_INITALARMS | Event triggered when the Tool transitions from INIT to INITWITH ALARMS IDLE as the result of a problem during initialization | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 506 | ProcessingState\_PAUSED | Event triggered when Tool transitions to the PAUSED state | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 507 | ProcessingState\_READY | Event triggered when Tool transitions to the READY state | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 508 | ProcessingState\_SETTING\_UP | Event triggered when Tool transitions to the SETTING UP state as the result of a PP\_SELECT command | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 509 | ProcessingState\_ALARMPAUSED | Event triggered when Tool transitions to the ALARMPAUSED state as the result of an alarm | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 510 | ProcessingState\_ABORTING | Event triggered when Tool transitions to the ABORTING state as a result of receiving an ABORT command | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 511 | ProcessingState\_EXECUTING | Event triggered when a wafer is ready to be processed | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 512 | ProcessingState\_STOPPING | Event triggered when Tool transitions to the STOPPING state as a result of receiving a STOP command | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 513 | ProcessingState\_CHECKING | Event triggered when Tool transitions to the CHECKING state as a result of receiving a RESUME command | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 514 | ProcessingState\_INIT | Event triggered when Tool transitions to the INIT state | ProcessStateString  PreviousProcessState  ProcessState | 2032  2030  2031 |
| 1001 | AlarmSET | Alarm is set | AlarmID | 0 |
| 2001 | AlarmCLEAR | Alarm is cleared | AlarmID |  |
| 10000 | ProcessProgramOkay | Equipment validated downloaded recipe | ISRECIPEOKAY | 8009 |
|  |  |  |  |  |
| 9000 | indexing\_downset\_1\_pitch | Event triggered when indexing downset 1 pitch | power\_during\_indexing\_max  power\_during\_indexing\_average  torques\_during\_indexing\_max  torques\_during\_indexing\_average  index\_speed\_max  index\_speed\_average  index\_step | 7035  7036  7037  7038  7039  7040  7042 |
| 9001 | indexing\_12\_pitch | Event triggered when Indexing 12 pitch | power\_during\_indexing\_max  power\_during\_indexing\_average  torques\_during\_indexing\_max  torques\_during\_indexing\_average  index\_step | 7044  7045  7046  7047  7051 |
| 9002 | indexing\_visual\_inspection | Event triggered when Indexing at visual inspection 1 pitch | power\_during\_indexing\_max  power\_during\_indexing\_average  torques\_during\_indexing\_max  torques\_during\_indexing\_average  index\_speed\_max  index\_speed\_average  index\_step | 7053  7054  7055  7056  7057  7058  7060 |
| 9003 | indexing\_downset\_unit | Event triggered when Indexing downset unit | up\_position\_downset\_tool\_measured  down\_position\_downset\_tool\_measured  moving\_speed\_downset\_tool\_measured  up\_position\_support\_plate\_measured  down\_position\_support\_plate\_measured  moving\_speed\_support\_plate\_measured  force\_during\_downset\_measured\_max  force\_during\_downset\_measured\_average  force\_during\_movement\_measured\_max  cleaning\_air\_pressure  cleaning\_exhaust  tape\_lift\_sensor | 7089  7091  7093  7095  7097  7099  7101  7102  7104  7105  7106  7107 |
| 9004 | indexing\_jetter\_dispense\_01 | Event triggered when Indexing Jetter dispense unit 01 | Jetter\_dispense\_unit\_01\_air\_pressure  Jetter\_dispense\_unit\_01\_counter\_pulses  Jetter\_dispense\_unit\_01\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_01\_direct\_light\_level  Jetter\_dispense\_unit\_01\_indirect\_light\_level | 8109  8127  8129  8138  8139  8138  8139 |
| 9005 | indexing\_jetter\_dispense\_02 | Event triggered when Indexing Jetter dispense unit 02 | Jetter\_dispense\_unit\_02\_air\_pressure  Jetter\_dispense\_unit\_02\_counter\_pulses  Jetter\_dispense\_unit\_02\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_02\_direct\_light\_level  Jetter\_dispense\_unit\_02\_indirect\_light\_level | 8209  8227  8229  8238  8239 |
| 9006 | indexing\_jetter\_dispense\_03 | Event triggered when Indexing Jetter dispense unit 03 | Jetter\_dispense\_unit\_03\_air\_pressure  Jetter\_dispense\_unit\_03\_counter\_pulses  Jetter\_dispense\_unit\_03\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_03\_direct\_light\_level  Jetter\_dispense\_unit\_03\_indirect\_light\_level | 8309  8327  8329  8338  8339 |
| 9007 | indexing\_jetter\_dispense\_04 | Event triggered when Indexing Jetter dispense unit 04 | Jetter\_dispense\_unit\_04\_air\_pressure  Jetter\_dispense\_unit\_04\_counter\_pulses  Jetter\_dispense\_unit\_04\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_04\_direct\_light\_level  Jetter\_dispense\_unit\_04\_indirect\_light\_level | 8409  8427  8429  8438  8439 |
| 9008 | indexing\_jetter\_dispense\_05 | Event triggered when Indexing Jetter dispense unit 05 | Jetter\_dispense\_unit\_05\_air\_pressure  Jetter\_dispense\_unit\_05\_counter\_pulses  Jetter\_dispense\_unit\_05\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_05\_direct\_light\_level  Jetter\_dispense\_unit\_05\_indirect\_light\_level | 8509  8527  8529  8538  8539 |
| 9009 | indexing\_jetter\_dispense\_06 | Event triggered when indexing Jetter dispense unit 06 | Jetter\_dispense\_unit\_06\_air\_pressure  Jetter\_dispense\_unit\_06\_counter\_pulses  Jetter\_dispense\_unit\_06\_counter\_cleaning\_cycles  Jetter\_dispense\_unit\_06\_direct\_light\_level  Jetter\_dispense\_unit\_06\_indirect\_light\_level | 8609  8627  8629  8638  8639 |
| 9010 | indexing\_pin­\_curing\_station | Event triggered when indexing Pin Curing station | curing\_force\_max  curing\_force\_min\_in\_down\_position  curing\_force\_average\_in\_down\_position  curing\_temperature\_max\_\_bottom\_zone\_1  curing\_temperature\_min\_\_bottom\_zone\_1  curing\_temperature\_average\_\_bottom\_zone\_1  curing\_parallelism  up\_position\_curing  down\_position\_curing  moving\_speed\_curing\_max  up\_position\_support\_plate  down\_position\_support\_plate  moving\_speed\_support\_plate\_max  power\_for\_all\_motors\_max  power\_for\_all\_motors\_average | 7179  7180  7181  7184  7185  7186  7189  7190  7192  7194  7195  7197  7199  7200  7201 |
| 9011 | pin­\_curing\_station\_paper\_empty | Event triggered when paper is empty Pin Curing station | silicon\_paper\_empty | 7202 |
| 9012 | indexing \_electrical\_inline\_test | Event triggered when indexing electrical inline test | total\_number\_of\_contacting\_cycles  pass\_fail\_each\_position  fail\_each\_index\_cycle  tested\_each\_index\_cycle  up\_position\_test\_head  down\_position\_test\_head  moving\_speed\_test\_head\_max  up\_position\_support\_plate  down\_position\_support\_plate  moving\_speed\_support\_plate\_max  force\_max  force\_average | 7217  7218  7219  7220  7221  7223  7225  7226  7228  7230  7231  7232 |
| 9013 | Indexing\_plasma\_unit | Event triggered when indexing Plasma unit | pressure  power  runtime  step\_width  axis\_start\_position  axis\_end\_position  axis\_standby\_position  temperature  rotation\_speed\_nozzle | 7235  7236  7237  7238  7239  7240  7241  7242  7243 |
| 9014 | Indexing\_jetter\_sealing\_01 | Event triggered when indexing Jetter sealing unit 01 | Jetter\_sealing\_01\_air\_pressure  Jetter\_sealing\_01\_counter\_pulses  Jetter\_sealing\_01\_counter\_cleaning\_cycles  Jetter\_sealing\_01\_direct\_light\_level  Jetter\_sealing\_01\_indirect\_light\_level | 7453  7471  7473  7482  7483 |
| 9015 | indexing\_jetter\_sealing\_02 | Event triggered when indexing Jetter sealing unit 02 | Jetter\_sealing\_02\_air\_pressure  Jetter\_sealing\_02\_counter\_pulses  Jetter\_sealing\_02\_counter\_cleaning\_cycles  Jetter\_sealing\_02\_direct\_light\_level  Jetter\_sealing\_02\_indirect\_light\_level | 7553  7571  7573  7482  7483 |
| 9016 | indexing\_jetter\_sealing\_03 | Event triggered when indexing Jetter sealing unit 03 | Jetter\_sealing\_03\_air\_pressure  Jetter\_sealing\_03\_counter\_pulses  Jetter\_sealing\_03\_counter\_cleaning\_cycles  Jetter\_sealing\_03\_direct\_light\_level  Jetter\_sealing\_03\_indirect\_light\_level | 7653  7671  7673  7482  7483 |
| 9017 | indexing\_jetter\_sealing\_04 | Event triggered when indexing Jetter sealing unit 04 | Jetter\_sealing\_04\_air\_pressure  Jetter\_sealing\_04\_counter\_pulses  Jetter\_sealing\_04\_counter\_cleaning\_cycles  Jetter\_sealing\_04\_direct\_light\_level  Jetter\_sealing\_04\_indirect\_light\_level | 7753  7771  7773  7482  7483 |
| 9018 | indexing\_jetter\_sealing\_05 | Event triggered when indexing Jetter sealing unit 05 | Jetter\_sealing\_05\_air\_pressure  Jetter\_sealing\_05\_counter\_pulses  Jetter\_sealing\_05\_counter\_cleaning\_cycles  Jetter\_sealing\_05\_direct\_light\_level  Jetter\_sealing\_05\_indirect\_light\_level | 7853  7871  7873  7482  7483 |
| 9019 | indexing\_jetter\_sealing\_06 | Event triggered when indexing Jetter sealing unit 06 | Jetter\_sealing\_06\_air\_pressure  Jetter\_sealing\_06\_counter\_pulses  Jetter\_sealing\_06\_counter\_cleaning\_cycles  Jetter\_sealing\_06\_direct\_light\_level  Jetter\_sealing\_06\_indirect\_light\_level | 7953  7971  7973  7482  7483 |
| 9020 | indexing\_curing\_oven | Event triggered when indexing Oven for curing | temperature\_sensor\_1  temperature\_sensor\_2  temperature\_sensor\_3  transport\_speed\_max  transport\_speed\_average  exhaust\_level  cooling\_air\_pressure  power\_during\_indexing\_max  power\_during\_indexing\_min  power\_during\_indexing\_average  torques\_during\_indexing\_max  torques\_during\_indexing\_min  torques\_during\_indexing\_average  time\_at\_curing | 7307  7308  7309  7312  7313  7314  7315  7316  7317  7318  7319  7320  7321  7322 |
| 9021 | curing\_oven\_data\_every\_10\_min | Event triggered after every 10 minutee intervall | temperature\_sensor\_1  temperature\_sensor\_2  temperature\_sensor\_3 | 7307  7308  7309 |
| 9022 | module\_height\_mesaurement | Event triggered after each Modul hight measurement | force\_air\_pressure\_during\_punching  counter\_for\_track\_1  counter\_for\_track\_2 | 7342  7345  7346 |
| 9023 | bad\_mark\_punch | Event triggered on every bad mark punch | X\_position  Y\_position  up\_position\_of\_puncher  down\_position\_of\_puncher  force\_air\_pressure\_during\_punching  air\_pressure\_max  air\_pressure\_avarage  number\_of\_punchings | 7351  7352  7353  7354  7355  7356  7357  7358 |
| 9024 | jetter\_dispense\_01\_at\_module | Event triggered on Jetter dispense unit 01 module | Jetter\_dispense\_unit\_01\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_01\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_01\_X\_work\_position\_measured  Jetter\_dispense\_unit\_01\_y\_work\_position\_measured  Jetter\_dispense\_unit\_01\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_01\_detecting\_level  Jetter\_dispense\_unit\_01\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_01\_module\_offset\_correction\_Y  Bin\_code\_module | 8119  8120  8123  8124  8132  8133  8136  8137  7025 |
| 9025 | jetter\_dispense\_02\_at\_module | Event triggered on Jetter dispense unit 02 module | Jetter\_dispense\_unit\_02\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_02\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_02\_X\_work\_position\_measured  Jetter\_dispense\_unit\_02\_y\_work\_position\_measured  Jetter\_dispense\_unit\_02\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_02\_detecting\_level  Jetter\_dispense\_unit\_02\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_02\_module\_offset\_correction\_Y  Bin\_code\_module | 8219  8220  8223  8224  8232  8233  8236  8237  7025 |
| 9026 | jetter\_dispense\_03\_at\_module | Event triggered on Jetter dispense unit 03 module | Jetter\_dispense\_unit\_03\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_03\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_03\_X\_work\_position\_measured  Jetter\_dispense\_unit\_03\_y\_work\_position\_measured  Jetter\_dispense\_unit\_03\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_03\_detecting\_level  Jetter\_dispense\_unit\_03\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_03\_module\_offset\_correction\_Y  Bin\_code\_module | 8319  8320  8323  8324  8332  8333  8336  8337  7025 |
| 9027 | jetter\_dispense\_04\_at\_module | Event triggered on Jetter dispense unit 04 module | Jetter\_dispense\_unit\_04\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_04\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_04\_X\_work\_position\_measured  Jetter\_dispense\_unit\_04\_y\_work\_position\_measured  Jetter\_dispense\_unit\_04\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_04\_detecting\_level  Jetter\_dispense\_unit\_04\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_04\_module\_offset\_correction\_Y  Bin\_code\_module | 8419  8420  8423  8424  8432  8433  8436  8437  7025 |
| 9028 | jetter\_dispense\_05\_at\_module | Event triggered on Jetter dispense unit 05 module | Jetter\_dispense\_unit\_05\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_05\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_05\_X\_work\_position\_measured  Jetter\_dispense\_unit\_05\_y\_work\_position\_measured  Jetter\_dispense\_unit\_05\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_05\_detecting\_level  Jetter\_dispense\_unit\_05\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_05\_module\_offset\_correction\_Y  Bin\_code\_module | 8519  8520  8523  8524  8532  8533  8536  8537  7025 |
| 9029 | jetter\_dispense\_06\_at\_module | Event triggered on Jetter dispense unit 06 module | Jetter\_dispense\_unit\_06\_X\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_06\_y\_moving\_speed\_measured\_max  Jetter\_dispense\_unit\_06\_X\_work\_position\_measured  Jetter\_dispense\_unit\_06\_y\_work\_position\_measured  Jetter\_dispense\_unit\_06\_module\_detected\_yes\_no  Jetter\_dispense\_unit\_06\_detecting\_level  Jetter\_dispense\_unit\_06\_module\_offset\_correction\_X  Jetter\_dispense\_unit\_06\_module\_offset\_correction\_Y  Bin\_code\_module | 8619  8620  8623  8624  8632  8633  8636  8637  7025 |
| 9030 | jetter\_sealing\_01\_at\_module | Event triggered on Jetter sealing unit 01 module | Jetter\_sealing\_01\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_01\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_01\_X\_work\_position\_measured  Jetter\_sealing\_01\_y\_work\_position\_measured  Jetter\_sealing\_01\_module\_detected\_yes\_no  Jetter\_sealing\_01\_detecting\_level  Jetter\_sealing\_01\_module\_offset\_correction\_X\_  Jetter\_sealing\_01\_module\_offset\_correction\_Y  Bin\_code\_module | 7463  7464  7467  7468  7476  7477  7480  7481  7025 |
| 9031 | jetter\_sealing\_02\_at\_module | Event triggered on Jetter sealing unit 02 module | Jetter\_sealing\_02\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_02\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_02\_X\_work\_position\_measured  Jetter\_sealing\_02\_y\_work\_position\_measured  Jetter\_sealing\_02\_module\_detected\_yes\_no  Jetter\_sealing\_02\_detecting\_level  Jetter\_sealing\_02\_module\_offset\_correction\_X\_  Jetter\_sealing\_02\_module\_offset\_correction\_Y  Bin\_code\_module | 7563  7564  7567  7568  7576  7577  7580  7581  7025 |
| 9032 | jetter\_sealing\_03\_at\_module | Event triggered on Jetter sealing unit 03 module | Jetter\_sealing\_03\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_03\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_03\_X\_work\_position\_measured  Jetter\_sealing\_03\_y\_work\_position\_measured  Jetter\_sealing\_03\_module\_detected\_yes\_no  Jetter\_sealing\_03\_detecting\_level  Jetter\_sealing\_03\_module\_offset\_correction\_X\_  Jetter\_sealing\_03\_module\_offset\_correction\_Y  Bin\_code\_module | 7663  7664  7667  7668  7676  7677  7680  7681  7025 |
| 9033 | jetter\_sealing\_04\_at\_module | Event triggered on Jetter sealing unit 04 module | Jetter\_sealing\_04\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_04\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_04\_X\_work\_position\_measured  Jetter\_sealing\_04\_y\_work\_position\_measured  Jetter\_sealing\_04\_module\_detected\_yes\_no  Jetter\_sealing\_04\_detecting\_level  Jetter\_sealing\_04\_module\_offset\_correction\_X\_  Jetter\_sealing\_04\_module\_offset\_correction\_Y  Bin\_code\_module | 7763  7764  7767  7768  7776  7777  7780  7781  7025 |
| 9034 | jetter\_sealing\_05\_at\_module | Event triggered on Jetter sealing unit 05 module | Jetter\_sealing\_05\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_05\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_05\_X\_work\_position\_measured  Jetter\_sealing\_05\_y\_work\_position\_measured  Jetter\_sealing\_05\_module\_detected\_yes\_no  Jetter\_sealing\_05\_detecting\_level  Jetter\_sealing\_05\_module\_offset\_correction\_X\_  Jetter\_sealing\_05\_module\_offset\_correction\_Y  Bin\_code\_module | 7863  7864  7867  7868  7876  7877  7880  7881  7025 |
| 9035 | jetter\_sealing\_06\_at\_module | Event triggered on Jetter sealing unit 06 module | Jetter\_sealing\_06\_X\_moving\_speed\_measured\_max  Jetter\_sealing\_06\_y\_moving\_speed\_measured\_max  Jetter\_sealing\_06\_X\_work\_position\_measured  Jetter\_sealing\_06\_y\_work\_position\_measured  Jetter\_sealing\_06\_module\_detected\_yes\_no  Jetter\_sealing\_06\_detecting\_level  Jetter\_sealing\_06\_module\_offset\_correction\_X\_  Jetter\_sealing\_06\_module\_offset\_correction\_Y  Bin\_code\_module | 7963  7964  7967  7968  7976  7977  7980  7981  7025 |
| 9036 | jedec\_tray\_handler\_event | Event triggered on JEDEC tray handler | tray\_number | 7162 |
| 9037 | indexing\_ dispense\_AOI | Event triggered on Dispense AOI | Dispense\_AOI\_direct\_light\_level  Dispense\_AOI\_indirect\_light\_level | 7157  7158 |
| 9038 | indexing\_post\_bond\_inspection | Event triggered on Post-Bond Inspection | Post\_Bond\_Inspection\_direct\_light\_level  Post\_Bond\_Inspection\_indirect\_light\_level | 7174  7175 |
| 9039 | indexing\_final\_bond\_inspection | Event triggered on Final-Bond Inspection | Post\_Final\_Bond\_Inspection\_direct\_light\_level  Post\_Final\_Bond\_Inspection\_indirect\_light\_level | 7214  7215 |
| 9040 | indexing\_sealing\_AOI | Event triggered on Sealing AOI indexing | Sealing\_AOI\_direct\_light\_level  Sealing\_AOI\_indirect\_light\_level | 7301  7302 |
| 9041 | indexing\_VI\_assembly\_module | Event triggered on VI module assembly indexing | VI\_module\_assembly\_indirect\_light\_level | 7331  7332 |
| 9042 | indexing\_VI\_ISO\_module | Event triggered on VI module ISO indexing | VI\_module\_ISO\_direct\_light\_level  VI\_module\_ISO\_indirect\_light\_level | 7339  7340 |
| 9043 | indexing\_bad\_hole\_detection | Event triggered on Input bad hole detection unit | Input\_bad\_hole\_detection\_unit\_light\_level\_track\_1  Input\_bad\_hole\_detection\_unit\_light\_level\_track\_2 | 7086  7087 |
| 9044 | bad\_hole\_detection\_at\_module | Event triggered at bad hole detection module | Input\_bad\_hole\_detection\_unit\_bad\_hole\_detected\_yes\_no  Input\_bad\_hole\_detection\_unit\_X\_position\_tape  Input\_bad\_hole\_detection\_unit\_y\_position\_tape  Input\_bad\_hole\_detection\_unit\_detecting\_level\_measured  Input\_bad\_hole\_detection\_unit\_offset\_correction | 7077  7078  7079  7082  7085 |
| 9045 | sealing\_AOI\_at\_module | Event triggered at Sealing AOI module | Sealing\_AOI\_module\_pass\_fail  Sealing\_AOI\_x\_position\_of\_each\_dot\_measured  Sealing\_AOI\_y\_position\_of\_each\_dot\_measured  Sealing\_AOI\_detecting\_level\_glue\_area\_  Sealing\_AOI\_detecting\_level\_no\_glue\_area  Sealing\_AOI\_Jetter\_ID\_of\_dispensed\_module  Bin\_code\_module | 7291  7292  7293  7295  7297  7294  7025 |
| 9046 | dispense\_AOI\_at\_module | Event triggered at Dispense AOI module | Dispense\_AOI\_module\_pass\_fail  Dispense\_AOI\_x\_position\_of\_each\_dot\_measured  Dispense\_AOI\_y\_position\_of\_each\_dot\_measured  Dispense\_AOI\_detecting\_level\_glue\_area  Dispense\_AOI\_detecting\_level\_no\_glue\_area  Dispense\_AOI\_Jetter\_ID\_of\_dispensed\_module  Bin\_code\_module | 7147  7148  7149  7151  7153  7150  7025 |
| 9047 | post\_bond\_inspection\_module | Event triggered at Post-Bond Inspection module | Post\_Bond\_Inspection\_module\_pass\_fail  Post\_Bond\_Inspection\_x\_position\_of\_each\_placed\_module  Post\_Bond\_Inspection\_y\_position\_of\_each\_placed\_module  Post\_Bond\_Inspection\_rotation\_of\_each\_module | 7165  7166  7167  7168 |
| 9048 | final\_bond\_inspection\_module | Event triggered at Final-Bond Inspection module | Post\_Final\_Bond\_Inspection\_module\_pass\_fail  Post\_Final\_Bond\_Inspection\_x\_position\_of\_each\_module  Post\_Final\_Bond\_Inspection\_y\_position\_of\_each\_module  Post\_Final\_Bond\_Inspection\_rotation\_of\_each\_module  Post\_Final\_Bond\_Inspection\_detecting\_level\_spec\_min  Post\_Final\_Bond\_Inspection\_detecting\_level\_spec\_max  Bin\_code\_module | 7204  7205  7206  7207  7212  7213  7025 |
| 9049 | VI\_module\_assembly\_event | Event triggered at VI assembly module | VI\_module\_assembly\_module\_pass\_fail  VI\_module\_assembly\_detecting\_level\_abnormality  Bin\_code\_module | 7326  7327  7025 |
| 9050 | VI\_module\_ISO\_event | Event triggered at VI ISO module | VI\_module\_ISO\_module\_pass\_fail  VI\_module\_ISO\_detecting\_level\_abnormality  Bin\_code\_module | 7334  7335  7025 |
| 9051 | input\_spooler\_winding | Event triggered on Input Spooler winding cycle | winding\_direction  power\_during\_winding  buffer\_full  buffer\_half-full  buffer\_empty  interline\_full | 7028  7029  7030  7031  7032  7033 |
| 9052 | output\_spooler\_winding | Event triggered on Output Spooler winding cycle | power\_during\_winding  buffer\_full  buffer\_half\_full  buffer\_empty  interline\_empty | 7071  7072  7073  7074  7075 |
| 9053 | buffer\_1\_winding | Event triggered on Buffer1 winding cycle | buffer\_full  buffer\_half\_full  buffer\_empty | 7062  7063  7064 |
| 9054 | buffer\_2\_winding | Event triggered on Buffer2 winding cycle | buffer\_full  buffer\_half\_full  buffer\_empty | 7066  7067  7068 |
| 8000 | ExecuteRemoteCommandResponse | Event triggered on ExecuteRemoteCommandResponse received from equipment | ExecuteRemoteCommandResponseData | 9000 |
| 8001 | GetProductsResponse | Event triggered on GetProductsResponse received from equipment | GetProductsResponseData | 9001 |
| 8002 | SelectProductResponse | Event triggered on SelectProductResponse received from equipment | SelectProductResponseData | 9002 |
| 8003 | DownloadProductResponse | Event triggered on DownloadProductResponse received from equipment | DownloadProductResponseData | 9003 |
| 8004 | UploadProductResponse | Event triggered on UploadProductResponse received from equipment | UploadProductResponseData | 9004 |
| 8005 | SetTerminalMessageResponse | Event triggered on SetTerminalMessageResponse received from equipment | SetTerminalMessageResponseData | 9005 |
| 8006 | GetUsersResponse | Event triggered on GetUsersResponse received from equipment | GetUsersResponseData | 9006 |
| 8007 | GetLoggedInUsersResponse | Event triggered on GetLoggedInUsersResponse received from equipment | GetLoggedInUsersResponseData | 9007 |
| 8008 | CreateLotResponse | Event triggered on CreateLotResponse received from equipment | CreateLotResponseData | 9008 |
| 8009 | GetLotResponse | Event triggered on GetLotResponse received from equipment | GetLotResponseData | 9009 |
| 8010 | GetLotsResponse | Event triggered on GetLotsResponse received from equipment | GetLotsResponseData | 9010 |
| 8011 | UpdateLotResponse | Event triggered on UpdateLotResponse received from equipment | UpdateLotResponseData | 9011 |
| 8012 | DeleteLotResponse | Event triggered on DeleteLotResponse received from equipment | DeleteLotResponseData | 9012 |
| 8013 | RenameProductResponse | Event triggered on RenameProductResponse received from equipment | RenameProductResponseData | 9013 |
| 8050 | VariableChanged | Event triggered on VariableChanged received from equipment | VariableChanged\_Name  VariableChanged\_ObjectType  VariableChanged\_DataType  VariableChanged\_Value | 9096  9097  9098  9099 |
| 8051 | ModuleProcessStateChanged | Event triggered on ModuleProcessStateChanged received from equipment | ModuleProcessStateChangedData | 9051 |
| 8052 | MaterialReceived | Event triggered on MaterialReceived received from equipment | MaterialReceivedData | 9052 |
| 8053 | MaterialProcessed | Event triggered on MaterialProcessed received from equipment | MaterialProcessedData | 9053 |
| 8054 | MaterialRemoved | Event triggered on MaterialRemoved received from equipment | MaterialRemovedData | 9054 |
| 8055 | UserLoggedIn | Event triggered on UserLoggedIn received from equipment | UserLoggedInData | 9055 |
| 8056 | UserLoggedOut | Event triggered on UserLoggedOut received from equipment | UserLoggedOutData | 9056 |
| 8057 | UserCreated | Event triggered on UserCreated received from equipment | UserCreatedData | 9057 |
| 8058 | UserDeleted | Event triggered on UserDeleted received from equipment | UserDeletedData | 9058 |
| 8059 | ControlStateChanged | Event triggered on ControlStateChanged received from equipment | ControlStateChangedData | 9059 |
| 8060 | LotCreated | Event triggered on LotCreated received from equipment | LotCreatedData | 9060 |
| 8061 | LotDeleted | Event triggered on LotDeleted received from equipment | LotDeletedData | 9061 |
| 8062 | LotStarted | Event triggered on LotStarted received from equipment | LotStartedData | 9062 |
| 8063 | LotCompleted | Event triggered on LotCompleted received from equipment | LotCompleted\_Name  LotCompleted\_Count  LotCompleted\_Product  LotCompleted\_BadCount  LotCompleted\_GoodCount  LotCompleted\_Yield  LotCompleted\_StartTime  LotCompleted\_EndTime  LotCompleted\_AssemblyLotID  LotCompleted\_AssemblyLotQty  LotCompleted\_AssemblyLotRejects | 9077  9078  9079  9080  9081  9082  9083  9084  9085  9086  9087 |
| 8064 | LotAborted | Event triggered on LotAborted received from equipment | LotAbortedData | 9064 |
| 8065 | LotPaused | Event triggered on LotPaused received from equipment | LotPausedData | 9065 |
| 8066 | LotResumed | Event triggered on LotResumed received from equipment | LotResumedData | 9066 |
| 8067 | ProductCreated | Event triggered on ProductCreated received from equipment | ProductCreatedData | 9067 |
| 8068 | ProductSelected | Event triggered on ProductSelected received from equipment | ProductSelectedData | 9068 |
| 8069 | ProductDeleted | Event triggered on ProductDeleted received from equipment | ProductDeletedData | 9069 |
| 8070 | ProductStored | Event triggered on ProductStored received from equipment | ProductStoredData | 9070 |
| 8071 | ProductDownloaded | Event triggered on ProductDownloaded received from equipment | ProductDownloadedData | 9071 |
| 8072 | OperatorCommandExecuted | Event triggered on OperatorCommandExecuted received from equipment | OperatorCommandExecutedData | 9072 |
| 8073 | ItemsProcessStarted | Event triggered on ItemsProcessStarted received from equipment | ItemsProcessStartedData | 9073 |
| 8074 | ItemsProcessCompleted | Event triggered on ItemsProcessCompleted received from equipment | ItemsProcessCompletedData | 9074 |
| 8075 | ItemProcessStarted | Event triggered on ItemProcessStarted received from equipment | ItemProcessStartedData | 9075 |
| 8076 | ItemProcessCompleted | Event triggered on ItemProcessCompleted received from equipment | ItemProcessCompletedData | 9076 |
| 8077 | MaterialReport | Event triggered on MaterialReport received from equipment | MaterialReport\_LotName  MaterialReport\_AssemblyLotID  MaterialReport\_MaterialId  MaterialReport\_MaterialConsumption  MaterialReport\_LGARejects | 9088  9089  9090  9091  9092 |
| 8078 | ItemCompleted | Event triggered on ItemCompleted received from equipment | ItemCompletedData | 9095 |
| 8079 | SiplaceDataEvent | Event triggered when siplace data are ready and send out | SiplaceData | 9100 |

## All Equipment Constants

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ECID** | **Variable Name** | **Description** | **Type** | **Min** | **Max** | **Default** |
| 4000 | EstablishCommunicationsTimeout | Communication attempt timeout. When the Communication State Machine is enabled but not communicating the machine will attempt to establish communication with a host every timeout period. | U2 | 0 |  | 10 |
| 4011 | WbitS10 | Request host reply for stream 10 messages (Terminal Services). Possible values include 1 (reply) 0 (no reply). | Bo | 0 | 1 | 1 |
| 4012 | WbitS5 | Request host reply for stream 5 messages (Alarms). Possible values include 1 (reply) 0 (no reply). | Bo | 0 | 1 | 1 |
| 4013 | WbitS6 | Request host reply for stream 6 messages (Events). If the machine is producing frequent collection events it may be a good idea to disable request reply. Possible values include 1 (reply) 0 (no reply). | Bo | 0 | 1 | 1 |
| 4020 | TimeFormat | Time format selection. Possible values include 1 (compliant 16 byte); 0 (not compliant 12 byte) and 2 (Extended YYYY-MM-DDThh:mm:ss.sTZD). | U4 | 0 | 2 | 1 |
| 4021 | DefCtrlOfflineState | State of the Control State Machine when going offline. Possible values include 1 – Equipment Offline 3 – Host Offline | U1 | 1 | 3 | 3 |
| 4022 | EventReportMsg | Specifies the event report message. Possible values include 67083 (S6F11) 67075 (S6F3) 67085 (S6F13) | U4 | 0 |  | 67083 hafr: (do not change) |
| 4023 | DefaultCommState | The default state of the GEM communications state machine where 0 – disabled and 256 – enabled. | U4 | 0 | 256 | 256 |
| 4024 | DefaultCtrlState | The default state of the GEM control state machine | U1 | 0 | 3 | 0 |
| 4025 | HeartBeat | S1F1 message level circuit assurance (0 turns it off) | U2 |  |  | 0 |
| 4028 | LimitFreq | The frequency at which limits with GetValue callbacks are polled (0 turns it off) | U2 |  |  | 0 |
| 4031 | S6MultiBlockInquire | Enable or disable the usage of S6F5 multi-block inquire messages. | Bo |  |  | 0 |
| 4036 | ExtendedTimeFormat | When TimeFormat-2: 0-report time values in UTC (default setting); 1-local time with timezone offset | U1 | 0 | 1 | 0 |
| 4037 | UpdateSystemClock | Option for setting System Clock | Bo |  |  | 1 |
| 4038 | AutoRejectS2F31 | Reject S2F31 Date and Time Set Requests from Host | Bo |  |  | 0 |
| 14902 | PDBSecsInterface | Host Configuratiom ( 0 = No Host, 1 = Infineon Host, 2 = DBMATIK Host Simulator ) | U1 | 0 | 2 | 1 |
| 301000 | MaxSimultaneousTraces | The maximum number of traces that can be requested simultaneously from the host | U4 |  |  | 10 |
| 301001 | MaxTraceFrequency | The maximum rate at which a host can request a trace report to be delivered | U4 |  |  | 100 |
| 301002 | MaxTraceVIDs | The maximum number of VIDs that can be requested for any single trace report | U4 |  |  | 500 |
| 301005 | VariableReportingStyle | S1F3 and S2F23 VID tolerance | U4 |  |  | 1 |
| 301006 | TraceTimestampTolerance | The allowable variation for any given trace report’s timestamp from the expected timestamp before triggering event TraceTimestampOutOfTolerance. | U4 |  |  | 20 |
| 301007 | ReportGenerationDelay | This value represents the expected amount of time it takes CIMConnect to build a 500 VID Report. This number will be subtracted from the allowed wait time for either an S1F3 request or a Trace Report. | U4 |  |  | 20 |
| 301008 | TraceReportMultiBlock | This variable represents whether or not CIMConnect can automatically send a multi-block message for Trace Reports that are larger than 244 bytes | U4 |  |  | 1 |
| 301009 | ReportOfflineControlState | When transitioning to Offline control state report CONTROLSTATE as Offline (1-enable 0-default) | Bo | 0 | 1 | 1 |
| 301011 | E30S6F1TOTSMPHandling | Options for sending S6F1 trace reports when TOTSMP is not multiple of REPGSZ | U1 | 0 | 1 | 0 |
| 301013 | SupportPV2 | 0 – default behavior; 1 – enable PV2 behavior | U1 |  |  | 0 |
| 392000 | Use0303S14F20 | 1-list of 4 items with errcode/errtext pairs; 0-pre E5-0303 with list of 3 items (old behavior) | Bo |  |  | 1 |
| 392001 | CheckFmtS14F1 | 1-check the format of S14F1 message and send S9F7; 2-check the format and send S14F2 with error info; 0-don’t check the format (old behavior) | U1 |  |  | 0 |
| 5004 | recipe | Logistics Lot | A |  |  |  |
| 5005 | product\_name | Logistics Lot product name | A |  |  |  |
| 5080 | X\_position\_tape\_desired | Input bad hole detection unit X position tape desired |  |  |  |  |
| 5081 | y\_position\_tape\_desired | Input bad hole detection unit y position tape desired |  |  |  |  |
| 5169 | x\_position\_desired | Post-Bond Inspection x position desired |  |  |  |  |
| 5170 | y\_position\_desired | Post-Bond Inspection y position desired |  |  |  |  |
| 5171 | rotation\_desired | Post-Bond Inspection rotation desired |  |  |  |  |
| 5177 | curing\_time | Pin Curing station curing time |  |  |  |  |
| 5182 | curing\_force | Pin Curing station curing force |  |  |  |  |
| 5187 | curing\_temperature\_bottom\_(each\_zone) | Pin Curing station curing temperature bottom (each zone) |  |  |  |  |
| 5191 | up\_position\_curing\_desired | Pin Curing station up position curing desired |  |  |  |  |
| 5193 | down\_position\_curing\_desired | Pin Curing station down position curing desired |  |  |  |  |
| 5196 | up\_position\_support\_plate\_desired | Pin Curing station up position support plate desired |  |  |  |  |
| 5198 | down\_position\_support\_plate\_desired | Pin Curing station down position support plate desired |  |  |  |  |
| 5209 | x\_position\_desired | Post-Final-Bond Inspection x position desired |  |  |  |  |
| 5210 | y\_position\_desired | Post-Final-Bond Inspection y position desired |  |  |  |  |
| 5211 | rotation\_desired | Post-Final-Bond Inspection rotation desired |  |  |  |  |
| 5222 | up\_position\_test\_head\_desired | Electrical inline test up position test head desired |  |  |  |  |
| 5224 | down\_position\_test\_head\_desired | Electrical inline test down position test head desired |  |  |  |  |
| 5227 | up\_position\_support\_plate\_desired | Electrical inline test up position support plate desired |  |  |  |  |
| 5229 | down\_position\_support\_plate\_desired | Electrical inline test down position support plate desired |  |  |  |  |
| 5233 | force\_desired | Electrical inline test force desired |  |  |  |  |
| 5244 | pressure | Plasma unit pressure |  |  |  |  |
| 5245 | power | Plasma unit power |  |  |  |  |
| 5246 | step\_width | Plasma unit step width |  |  |  |  |
| 5247 | axis\_start\_position | Plasma unit axis start position |  |  |  |  |
| 5248 | axis\_end\_position | Plasma unit axis end position |  |  |  |  |
| 5249 | axis\_standby\_position | Plasma unit axis standby position |  |  |  |  |
| 5250 | temperature | Plasma unit temperature |  |  |  |  |
| 5251 | rotation\_speed\_nozzle | Plasma unit rotation speed nozzle |  |  |  |  |
| 5304 | temperature\_setting | Oven for curing temperature setting |  |  |  |  |
| 5305 | time\_before\_stand\_by | Oven for curing time before stand by |  |  |  |  |
| 5306 | all\_other\_available\_parameter | Oven for curing all other available parameter |  |  |  |  |
| 5311 | stand\_by\_temperature | Oven for curing stand by temperature |  |  |  |  |
| 5344 | max\_allowed\_height | Module height measurement max allowed height |  |  |  |  |
| 5350 | punch\_unit\_on/off | Bad mark punch punch unit on/off |  |  |  |  |
| 5049 | index\_speed\_average | Indexing 12 pitch index speed average |  |  |  |  |
| 5050 | index\_delay | Indexing 12 pitch index delay |  |  |  |  |
| 5059 | index\_delay | Indexing at visual inspection 1 pitch index delay |  |  |  |  |
| 5070 | winding\_direction | Output spooler winding direction |  |  |  |  |
| 5090 | up\_position\_downset\_tool\_desired | Downset unit up position downset tool desired |  |  |  |  |
| 5092 | down\_position\_downset\_tool\_desired | Downset unit down position downset tool desired |  |  |  |  |
| 5094 | moving\_speed\_downset\_tool\_desired | Downset unit moving speed downset tool desired |  |  |  |  |
| 5096 | up\_position\_support\_plate\_desired | Downset unit up position support plate desired |  |  |  |  |
| 5098 | down\_position\_support\_plate\_desired | Downset unit down position support plate desired |  |  |  |  |
| 5100 | moving\_speed\_support\_plate\_desired | Downset unit moving speed support plate desired |  |  |  |  |
| 5103 | force\_desired | Downset unit force desired |  |  |  |  |
| 5041 | Indexing\_downset\_1\_pitch\_index\_delay | Indexing downset 1 pitch index delay |  |  |  |  |
| 5048 | Indexing\_12\_pitch\_index\_speed\_max | Indexing 12 pitch index speed max |  |  |  |  |
| 5454 | Jetter\_sealing\_01\_rising | Jetter sealing unit 01 rising |  |  |  |  |
| 5455 | Jetter\_sealing\_01\_falling | Jetter sealing unit 01 falling |  |  |  |  |
| 5456 | Jetter\_sealing\_01\_open\_time | Jetter sealing unit 01 open time |  |  |  |  |
| 5457 | Jetter\_sealing\_01\_needle\_lift | Jetter sealing unit 01 needle lift |  |  |  |  |
| 5458 | Jetter\_sealing\_01\_number\_of\_pulses | Jetter sealing unit 01 number of pulses |  |  |  |  |
| 5459 | Jetter\_sealing\_01\_nozzle\_heater\_temperature | Jetter sealing unit 01 nozzle heater temperature |  |  |  |  |
| 5460 | Jetter\_sealing\_01\_number\_of\_clean\_cycles | Jetter sealing unit 01 number of clean cycles |  |  |  |  |
| 5461 | Jetter\_sealing\_01\_clean\_interval\_time | Jetter sealing unit 01 clean interval time |  |  |  |  |
| 5462 | Jetter\_sealing\_01\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 01 clean interval number of pulses |  |  |  |  |
| 5465 | Jetter\_sealing\_01\_X\_moving\_speed\_desired | Jetter sealing unit 01 X moving speed desired |  |  |  |  |
| 5466 | Jetter\_sealing\_01\_y\_moving\_speed\_desired | Jetter sealing unit 01 y moving speed desired |  |  |  |  |
| 5469 | Jetter\_sealing\_01\_X\_work\_position\_desired | Jetter sealing unit 01 X work position desired |  |  |  |  |
| 5470 | Jetter\_sealing\_01\_y\_work\_position\_desired | Jetter sealing unit 01 y work position desired |  |  |  |  |
| 5474 | Jetter\_sealing\_01\_x\_position\_of\_each\_dot | Jetter sealing unit 01 x position of each dot |  |  |  |  |
| 5475 | Jetter\_sealing\_01\_y\_position\_of\_each\_dot | Jetter sealing unit 01 y position of each dot |  |  |  |  |
| 5554 | etter\_sealing\_02\_rising | Jetter sealing unit 02 rising |  |  |  |  |
| 5555 | Jetter\_sealing\_02\_falling | Jetter sealing unit 02 falling |  |  |  |  |
| 5556 | Jetter\_sealing\_02\_open\_time | Jetter sealing unit 02 open time |  |  |  |  |
| 5557 | Jetter\_sealing\_02\_needle\_lift | Jetter sealing unit 02 needle lift |  |  |  |  |
| 5558 | Jetter\_sealing\_02\_number\_of\_pulses | Jetter sealing unit 02 number of pulses |  |  |  |  |
| 5559 | Jetter\_sealing\_02\_nozzle\_heater\_temperature | Jetter sealing unit 02 nozzle heater temperature |  |  |  |  |
| 5560 | Jetter\_sealing\_02\_number\_of\_clean\_cycles | Jetter sealing unit 02 number of clean cycles |  |  |  |  |
| 5561 | Jetter\_sealing\_02\_clean\_interval\_time | Jetter sealing unit 02 clean interval time |  |  |  |  |
| 5562 | Jetter\_sealing\_02\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 02 clean interval number of pulses |  |  |  |  |
| 5565 | Jetter\_sealing\_02\_X\_moving\_speed\_desired | Jetter sealing unit 02 X moving speed desired |  |  |  |  |
| 5566 | Jetter\_sealing\_02\_y\_moving\_speed\_desired | Jetter sealing unit 02 y moving speed desired |  |  |  |  |
| 5569 | Jetter\_sealing\_02\_X\_work\_position\_desired | Jetter sealing unit 02 X work position desired |  |  |  |  |
| 5570 | Jetter\_sealing\_02\_y\_work\_position\_desired | Jetter sealing unit 02 y work position desired |  |  |  |  |
| 5574 | Jetter\_sealing\_02\_x\_position\_of\_each\_dot | Jetter sealing unit 02 x position of each dot |  |  |  |  |
| 5575 | Jetter\_sealing\_02\_y\_position\_of\_each\_dot | Jetter sealing unit 02 y position of each dot |  |  |  |  |
| 5654 | etter\_sealing\_03\_rising | Jetter sealing unit 03 rising |  |  |  |  |
| 5655 | Jetter\_sealing\_03\_falling | Jetter sealing unit 03 falling |  |  |  |  |
| 5656 | Jetter\_sealing\_03\_open\_time | Jetter sealing unit 03 open time |  |  |  |  |
| 5657 | Jetter\_sealing\_03\_needle\_lift | Jetter sealing unit 03 needle lift |  |  |  |  |
| 5658 | Jetter\_sealing\_03\_number\_of\_pulses | Jetter sealing unit 03 number of pulses |  |  |  |  |
| 5659 | Jetter\_sealing\_03\_nozzle\_heater\_temperature | Jetter sealing unit 03 nozzle heater temperature |  |  |  |  |
| 5660 | Jetter\_sealing\_03\_number\_of\_clean\_cycles | Jetter sealing unit 03 number of clean cycles |  |  |  |  |
| 5661 | Jetter\_sealing\_03\_clean\_interval\_time | Jetter sealing unit 03 clean interval time |  |  |  |  |
| 5662 | Jetter\_sealing\_03\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 03 clean interval number of pulses |  |  |  |  |
| 5665 | Jetter\_sealing\_03\_X\_moving\_speed\_desired | Jetter sealing unit 03 X moving speed desired |  |  |  |  |
| 5666 | Jetter\_sealing\_03\_y\_moving\_speed\_desired | Jetter sealing unit 03 y moving speed desired |  |  |  |  |
| 5669 | Jetter\_sealing\_03\_X\_work\_position\_desired | Jetter sealing unit 03 X work position desired |  |  |  |  |
| 5670 | Jetter\_sealing\_03\_y\_work\_position\_desired | Jetter sealing unit 03 y work position desired |  |  |  |  |
| 5674 | Jetter\_sealing\_03\_x\_position\_of\_each\_dot | Jetter sealing unit 03 x position of each dot |  |  |  |  |
| 5675 | Jetter\_sealing\_03\_y\_position\_of\_each\_dot | Jetter sealing unit 03 y position of each dot |  |  |  |  |
| 5754 | Jetter\_sealing\_04\_rising | Jetter sealing unit 04 rising |  |  |  |  |
| 5755 | Jetter\_sealing\_04\_falling | Jetter sealing unit 04 falling |  |  |  |  |
| 5756 | Jetter\_sealing\_04\_open\_time | Jetter sealing unit 04 open time |  |  |  |  |
| 5757 | Jetter\_sealing\_04\_needle\_lift | Jetter sealing unit 04 needle lift |  |  |  |  |
| 5758 | Jetter\_sealing\_04\_number\_of\_pulses | Jetter sealing unit 04 number of pulses |  |  |  |  |
| 5759 | Jetter\_sealing\_04\_nozzle\_heater\_temperature | Jetter sealing unit 04 nozzle heater temperature |  |  |  |  |
| 5760 | Jetter\_sealing\_04\_number\_of\_clean\_cycles | Jetter sealing unit 04 number of clean cycles |  |  |  |  |
| 5761 | Jetter\_sealing\_04\_clean\_interval\_time | Jetter sealing unit 04 clean interval time |  |  |  |  |
| 5762 | Jetter\_sealing\_04\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 04 clean interval number of pulses |  |  |  |  |
| 5765 | Jetter\_sealing\_04\_X\_moving\_speed\_desired | Jetter sealing unit 04 X moving speed desired |  |  |  |  |
| 5766 | Jetter\_sealing\_04\_y\_moving\_speed\_desired | Jetter sealing unit 04 y moving speed desired |  |  |  |  |
| 5769 | Jetter\_sealing\_04\_X\_work\_position\_desired | Jetter sealing unit 04 X work position desired |  |  |  |  |
| 5770 | Jetter\_sealing\_04\_y\_work\_position\_desired | Jetter sealing unit 04 y work position desired |  |  |  |  |
| 5774 | Jetter\_sealing\_04\_x\_position\_of\_each\_dot | Jetter sealing unit 04 x position of each dot |  |  |  |  |
| 5775 | Jetter\_sealing\_04\_y\_position\_of\_each\_dot | Jetter sealing unit 04 y position of each dot |  |  |  |  |
| 5854 | Jetter\_sealing\_05\_rising | Jetter sealing unit 05 rising |  |  |  |  |
| 5855 | Jetter\_sealing\_05\_falling | Jetter sealing unit 05 falling |  |  |  |  |
| 5856 | Jetter\_sealing\_05\_open\_time | Jetter sealing unit 05 open time |  |  |  |  |
| 5857 | Jetter\_sealing\_05\_needle\_lift | Jetter sealing unit 05 needle lift |  |  |  |  |
| 5858 | Jetter\_sealing\_05\_number\_of\_pulses | Jetter sealing unit 05 number of pulses |  |  |  |  |
| 5859 | Jetter\_sealing\_05\_nozzle\_heater\_temperature | Jetter sealing unit 05 nozzle heater temperature |  |  |  |  |
| 5860 | Jetter\_sealing\_05\_number\_of\_clean\_cycles | Jetter sealing unit 05 number of clean cycles |  |  |  |  |
| 5861 | Jetter\_sealing\_05\_clean\_interval\_time | Jetter sealing unit 05 clean interval time |  |  |  |  |
| 5862 | Jetter\_sealing\_05\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 05 clean interval number of pulses |  |  |  |  |
| 5865 | Jetter\_sealing\_05\_X\_moving\_speed\_desired | Jetter sealing unit 05 X moving speed desired |  |  |  |  |
| 5866 | Jetter\_sealing\_05\_y\_moving\_speed\_desired | Jetter sealing unit 05 y moving speed desired |  |  |  |  |
| 5869 | Jetter\_sealing\_05\_X\_work\_position\_desired | Jetter sealing unit 05 X work position desired |  |  |  |  |
| 5870 | Jetter\_sealing\_05\_y\_work\_position\_desired | Jetter sealing unit 05 y work position desired |  |  |  |  |
| 5874 | Jetter\_sealing\_05\_x\_position\_of\_each\_dot | Jetter sealing unit 05 x position of each dot |  |  |  |  |
| 5875 | Jetter\_sealing\_05\_y\_position\_of\_each\_dot | Jetter sealing unit 05 y position of each dot |  |  |  |  |
| 5954 | Jetter\_sealing\_06\_rising | Jetter sealing unit 06 rising |  |  |  |  |
| 5955 | Jetter\_sealing\_06\_falling | Jetter sealing unit 06 falling |  |  |  |  |
| 5956 | Jetter\_sealing\_06\_open\_time | Jetter sealing unit 06 open time |  |  |  |  |
| 5957 | Jetter\_sealing\_06\_needle\_lift | Jetter sealing unit 06 needle lift |  |  |  |  |
| 5958 | Jetter\_sealing\_06\_number\_of\_pulses | Jetter sealing unit 06 number of pulses |  |  |  |  |
| 5959 | Jetter\_sealing\_06\_nozzle\_heater\_temperature | Jetter sealing unit 06 nozzle heater temperature |  |  |  |  |
| 5960 | Jetter\_sealing\_06\_number\_of\_clean\_cycles | Jetter sealing unit 06 number of clean cycles |  |  |  |  |
| 5961 | Jetter\_sealing\_06\_clean\_interval\_time | Jetter sealing unit 06 clean interval time |  |  |  |  |
| 5962 | Jetter\_sealing\_06\_clean\_interval\_number\_of\_pulses | Jetter sealing unit 06 clean interval number of pulses |  |  |  |  |
| 5965 | Jetter\_sealing\_06\_X\_moving\_speed\_desired | Jetter sealing unit 06 X moving speed desired |  |  |  |  |
| 5966 | Jetter\_sealing\_06\_y\_moving\_speed\_desired | Jetter sealing unit 06 y moving speed desired |  |  |  |  |
| 5969 | Jetter\_sealing\_06\_X\_work\_position\_desired | Jetter sealing unit 06 X work position desired |  |  |  |  |
| 5970 | Jetter\_sealing\_06\_y\_work\_position\_desired | Jetter sealing unit 06 y work position desired |  |  |  |  |
| 5974 | Jetter\_sealing\_06\_x\_position\_of\_each\_dot | Jetter sealing unit 06 x position of each dot |  |  |  |  |
| 5975 | Jetter\_sealing\_06\_y\_position\_of\_each\_dot | Jetter sealing unit 06 y position of each dot |  |  |  |  |
| 6110 | etter\_dispense\_unit\_01\_rising | Jetter dispense unit 01 rising |  |  |  |  |
| 6111 | Jetter\_dispense\_unit\_01\_rising\_falling | Jetter dispense unit 01 falling |  |  |  |  |
| 6112 | Jetter\_dispense\_unit\_01\_rising\_open\_time | Jetter dispense unit 01 open time |  |  |  |  |
| 6113 | Jetter\_dispense\_unit\_01\_rising\_needle\_lift | Jetter dispense unit 01 needle lift |  |  |  |  |
| 6114 | Jetter\_dispense\_unit\_01\_rising\_number\_of\_pulses | Jetter dispense unit 01 number of pulses |  |  |  |  |
| 6115 | Jetter\_dispense\_unit\_01\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 01 nozzle heater temperature |  |  |  |  |
| 6116 | Jetter\_dispense\_unit\_01\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 01 number of clean cycles |  |  |  |  |
| 6117 | Jetter\_dispense\_unit\_01\_rising\_clean\_interval\_time | Jetter dispense unit 01 clean interval time |  |  |  |  |
| 6118 | Jetter\_dispense\_unit\_01\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 01 clean interval number of pulses |  |  |  |  |
| 6121 | Jetter\_dispense\_unit\_01\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 01 X moving speed desired |  |  |  |  |
| 6122 | Jetter\_dispense\_unit\_01\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 01 y moving speed desired |  |  |  |  |
| 6125 | Jetter\_dispense\_unit\_01\_rising\_X\_work\_position\_desired | Jetter dispense unit 01 X work position desired |  |  |  |  |
| 6126 | Jetter\_dispense\_unit\_01\_rising\_y\_work\_position\_desired | Jetter dispense unit 01 y work position desired |  |  |  |  |
| 6130 | Jetter\_dispense\_unit\_01\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 01 x position of each dot |  |  |  |  |
| 6131 | Jetter\_dispense\_unit\_01\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 01 y position of each dot |  |  |  |  |
| 6210 | Jetter\_dispense\_unit\_02\_rising | Jetter dispense unit 02 rising |  |  |  |  |
| 6211 | Jetter\_dispense\_unit\_02\_rising\_falling | Jetter dispense unit 02 falling |  |  |  |  |
| 6212 | Jetter\_dispense\_unit\_02\_rising\_open\_time | Jetter dispense unit 02 open time |  |  |  |  |
| 6213 | Jetter\_dispense\_unit\_02\_rising\_needle\_lift | Jetter dispense unit 02 needle lift |  |  |  |  |
| 6214 | Jetter\_dispense\_unit\_02\_rising\_number\_of\_pulses | Jetter dispense unit 02 number of pulses |  |  |  |  |
| 6215 | Jetter\_dispense\_unit\_02\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 02 nozzle heater temperature |  |  |  |  |
| 6216 | Jetter\_dispense\_unit\_02\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 02 number of clean cycles |  |  |  |  |
| 6217 | Jetter\_dispense\_unit\_02\_rising\_clean\_interval\_time | Jetter dispense unit 02 clean interval time |  |  |  |  |
| 6218 | Jetter\_dispense\_unit\_02\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 02 clean interval number of pulses |  |  |  |  |
| 6221 | Jetter\_dispense\_unit\_02\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 02 X moving speed desired |  |  |  |  |
| 6222 | Jetter\_dispense\_unit\_02\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 02 y moving speed desired |  |  |  |  |
| 6225 | Jetter\_dispense\_unit\_02\_rising\_X\_work\_position\_desired | Jetter dispense unit 02 X work position desired |  |  |  |  |
| 6226 | Jetter\_dispense\_unit\_02\_rising\_y\_work\_position\_desired | Jetter dispense unit 02 y work position desired |  |  |  |  |
| 6230 | Jetter\_dispense\_unit\_02\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 02 x position of each dot |  |  |  |  |
| 6231 | Jetter\_dispense\_unit\_02\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 02 y position of each dot |  |  |  |  |
| 6310 | Jetter\_dispense\_unit\_03\_rising | Jetter dispense unit 03 rising |  |  |  |  |
| 6311 | Jetter\_dispense\_unit\_03\_rising\_falling | Jetter dispense unit 03 falling |  |  |  |  |
| 6312 | Jetter\_dispense\_unit\_03\_rising\_open\_time | Jetter dispense unit 03 open time |  |  |  |  |
| 6313 | Jetter\_dispense\_unit\_03\_rising\_needle\_lift | Jetter dispense unit 03 needle lift |  |  |  |  |
| 6314 | Jetter\_dispense\_unit\_03\_rising\_number\_of\_pulses | Jetter dispense unit 03 number of pulses |  |  |  |  |
| 6315 | Jetter\_dispense\_unit\_03\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 03 nozzle heater temperature |  |  |  |  |
| 6316 | Jetter\_dispense\_unit\_03\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 03 number of clean cycles |  |  |  |  |
| 6317 | Jetter\_dispense\_unit\_03\_rising\_clean\_interval\_time | Jetter dispense unit 03 clean interval time |  |  |  |  |
| 6318 | Jetter\_dispense\_unit\_03\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 03 clean interval number of pulses |  |  |  |  |
| 6321 | Jetter\_dispense\_unit\_03\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 03 X moving speed desired |  |  |  |  |
| 6322 | Jetter\_dispense\_unit\_03\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 03 y moving speed desired |  |  |  |  |
| 6325 | Jetter\_dispense\_unit\_03\_rising\_X\_work\_position\_desired | Jetter dispense unit 03 X work position desired |  |  |  |  |
| 6326 | Jetter\_dispense\_unit\_03\_rising\_y\_work\_position\_desired | Jetter dispense unit 03 y work position desired |  |  |  |  |
| 6330 | Jetter\_dispense\_unit\_03\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 03 x position of each dot |  |  |  |  |
| 6331 | Jetter\_dispense\_unit\_03\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 03 y position of each dot |  |  |  |  |
| 6410 | Jetter\_dispense\_unit\_04\_rising | Jetter dispense unit 04 rising |  |  |  |  |
| 6411 | Jetter\_dispense\_unit\_04\_rising\_falling | Jetter dispense unit 04 falling |  |  |  |  |
| 6412 | Jetter\_dispense\_unit\_04\_rising\_open\_time | Jetter dispense unit 04 open time |  |  |  |  |
| 6413 | Jetter\_dispense\_unit\_04\_rising\_needle\_lift | Jetter dispense unit 04 needle lift |  |  |  |  |
| 6414 | Jetter\_dispense\_unit\_04\_rising\_number\_of\_pulses | Jetter dispense unit 04 number of pulses |  |  |  |  |
| 6415 | Jetter\_dispense\_unit\_04\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 04 nozzle heater temperature |  |  |  |  |
| 6416 | Jetter\_dispense\_unit\_04\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 04 number of clean cycles |  |  |  |  |
| 6417 | Jetter\_dispense\_unit\_04\_rising\_clean\_interval\_time | Jetter dispense unit 04 clean interval time |  |  |  |  |
| 6418 | Jetter\_dispense\_unit\_04\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 04 clean interval number of pulses |  |  |  |  |
| 6421 | Jetter\_dispense\_unit\_04\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 04 X moving speed desired |  |  |  |  |
| 6422 | Jetter\_dispense\_unit\_04\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 04 y moving speed desired |  |  |  |  |
| 6425 | Jetter\_dispense\_unit\_04\_rising\_X\_work\_position\_desired | Jetter dispense unit 04 X work position desired |  |  |  |  |
| 6426 | Jetter\_dispense\_unit\_04\_rising\_y\_work\_position\_desired | Jetter dispense unit 04 y work position desired |  |  |  |  |
| 6430 | Jetter\_dispense\_unit\_04\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 04 x position of each dot |  |  |  |  |
| 6431 | Jetter\_dispense\_unit\_04\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 04 y position of each dot |  |  |  |  |
| 6510 | Jetter\_dispense\_unit\_05\_rising | Jetter dispense unit 05 rising |  |  |  |  |
| 6511 | Jetter\_dispense\_unit\_05\_rising\_falling | Jetter dispense unit 05 falling |  |  |  |  |
| 6512 | Jetter\_dispense\_unit\_05\_rising\_open\_time | Jetter dispense unit 05 open time |  |  |  |  |
| 6513 | Jetter\_dispense\_unit\_05\_rising\_needle\_lift | Jetter dispense unit 05 needle lift |  |  |  |  |
| 6514 | Jetter\_dispense\_unit\_05\_rising\_number\_of\_pulses | Jetter dispense unit 05 number of pulses |  |  |  |  |
| 6515 | Jetter\_dispense\_unit\_05\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 05 nozzle heater temperature |  |  |  |  |
| 6516 | Jetter\_dispense\_unit\_05\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 05 number of clean cycles |  |  |  |  |
| 6517 | Jetter\_dispense\_unit\_05\_rising\_clean\_interval\_time | Jetter dispense unit 05 clean interval time |  |  |  |  |
| 6518 | Jetter\_dispense\_unit\_05\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 05 clean interval number of pulses |  |  |  |  |
| 6521 | Jetter\_dispense\_unit\_05\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 05 X moving speed desired |  |  |  |  |
| 6522 | Jetter\_dispense\_unit\_05\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 05 y moving speed desired |  |  |  |  |
| 6525 | Jetter\_dispense\_unit\_05\_rising\_X\_work\_position\_desired | Jetter dispense unit 05 X work position desired |  |  |  |  |
| 6526 | Jetter\_dispense\_unit\_05\_rising\_y\_work\_position\_desired | Jetter dispense unit 05 y work position desired |  |  |  |  |
| 6530 | Jetter\_dispense\_unit\_05\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 05 x position of each dot |  |  |  |  |
| 6531 | Jetter\_dispense\_unit\_05\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 05 y position of each dot |  |  |  |  |
| 6610 | Jetter\_dispense\_unit\_06\_rising | Jetter dispense unit 06 rising |  |  |  |  |
| 6611 | Jetter\_dispense\_unit\_06\_rising\_falling | Jetter dispense unit 06 falling |  |  |  |  |
| 6612 | Jetter\_dispense\_unit\_06\_rising\_open\_time | Jetter dispense unit 06 open time |  |  |  |  |
| 6613 | Jetter\_dispense\_unit\_06\_rising\_needle\_lift | Jetter dispense unit 06 needle lift |  |  |  |  |
| 6614 | Jetter\_dispense\_unit\_06\_rising\_number\_of\_pulses | Jetter dispense unit 06 number of pulses |  |  |  |  |
| 6615 | Jetter\_dispense\_unit\_06\_rising\_nozzle\_heater\_temperature | Jetter dispense unit 06 nozzle heater temperature |  |  |  |  |
| 6616 | Jetter\_dispense\_unit\_06\_rising\_number\_of\_clean\_cycles | Jetter dispense unit 06 number of clean cycles |  |  |  |  |
| 6617 | Jetter\_dispense\_unit\_06\_rising\_clean\_interval\_time | Jetter dispense unit 06 clean interval time |  |  |  |  |
| 6618 | Jetter\_dispense\_unit\_06\_rising\_clean\_interval\_number\_of\_pulses | Jetter dispense unit 06 clean interval number of pulses |  |  |  |  |
| 6621 | Jetter\_dispense\_unit\_06\_rising\_X\_moving\_speed\_desired | Jetter dispense unit 06 X moving speed desired |  |  |  |  |
| 6622 | Jetter\_dispense\_unit\_06\_rising\_y\_moving\_speed\_desired | Jetter dispense unit 06 y moving speed desired |  |  |  |  |
| 6625 | Jetter\_dispense\_unit\_06\_rising\_X\_work\_position\_desired | Jetter dispense unit 06 X work position desired |  |  |  |  |
| 6626 | Jetter\_dispense\_unit\_06\_rising\_y\_work\_position\_desired | Jetter dispense unit 06 y work position desired |  |  |  |  |
| 6630 | Jetter\_dispense\_unit\_06\_rising\_x\_position\_of\_each\_dot | Jetter dispense unit 06 x position of each dot |  |  |  |  |
| 6631 | Jetter\_dispense\_unit\_06\_rising\_y\_position\_of\_each\_dot | Jetter dispense unit 06 y position of each dot |  |  |  |  |
|  |  |  |  |  |  |  |

## All Data Variables

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **DVID** | **Variable Name** | **Description** | **Type** | **Min** | **Max** | **Default Value** |
| 0 | AlarmID | ALID of the most recent alarm to change state. | U4 | 0 |  |  |
| 3 | PPChangeName | Name of the process program (recipe) created edited or deleted by the machine operator. | A |  |  |  |
| 4 | PPChangeStatus | Type of change made to a process program (recipe) by the machine operator. Possible values include 1 (created) 2 (edited) and 3 (deleted). | U1 | 0 | 255 |  |
| 6 | OperatorCommand | The name of a command issued by the machine operator. | L |  |  |  |
| 8 | HostECHostID | ID of the host that changed the EC value. This may be linked to CE HostECChange. See also DV HostECID. | U4 | 0 |  |  |
| 9 | HostECID | ECID changed by another host. This may be linked to CE HostECChange. See also DV HostECHostID. | U4 | 0 |  |  |
| 10 | HostCmdName | Name of the remote command sent by another host. | A |  |  |  |
| 11 | HostCmdHostID | ID of the host that sent a remote command. | U4 | 0 |  |  |
| 12 | HostPPChangeName | Name of the process program (recipe) changed by another host. This may be linked to collection event HostPPChange. See also DV HostPPChangeStatus and HostPPChangeHostID. | A |  |  |  |
| 13 | HostPPChangeStatus | Type of change made to a process program (recipe) by another host. Possible values include 1 (created) 2 (edited) and 3 (deleted). This may be linked to collection event HostPPChange. See also DV HostPPChangeName and HostPPChangeHostID. | U1 | U10 | 255 | 0 |
| 14 | HostPPChangeHostID | ID of the host that changed a process program (recipe). | U4 | 0 | 4294967295 | 0 |
| 112 | PPBodyIsValid | Name of the recipe that was validated by the tool. | A |  |  |  |
| 113 | E142Map | Updated E142 Map. | A |  |  |  |
| 2010 | PPError | A text data value with information about verification errors of a process program (recipe) that failed verification. | U1 | 0 | 255 | 0 |
| 2052 | ECChangeName | The name of the equipment constant changed by the machine operator. | U4 | 0 |  |  |
| 2053 | ECChangeValue | The value of the equipment constant changed by the machine operator. | A |  |  |  |
| 6000 | FrameID | Identification for the Wafer currently being processed. | A |  |  |  |
| xxxx | xxxx | xxxx xxxxx. | A |  |  |  |
|  |  |  |  |  |  |  |
| 7028 | winding\_direction | Input spooler winding direction |  |  |  |  |
| 7029 | power\_during\_winding | Input spooler power during winding |  |  |  |  |
| 7030 | buffer\_full | Input spooler buffer full |  |  |  |  |
| 7031 | buffer\_half-full | Input spooler buffer half-full |  |  |  |  |
| 7032 | buffer\_empty | Input spooler buffer empty |  |  |  |  |
| 7033 | interline\_full | Input spooler interline full |  |  |  |  |
| 7035 | power\_during\_indexing\_max | Indexing downset 1 pitch power during indexing max |  |  |  |  |
| 7036 | power\_during\_indexing\_average | Indexing downset 1 pitch power during indexing average |  |  |  |  |
| 7037 | torques\_during\_indexing\_max | Indexing downset 1 pitch torques during indexing max |  |  |  |  |
| 7038 | torques\_during\_indexing\_average | Indexing downset 1 pitch torques during indexing average |  |  |  |  |
| 7039 | index\_speed\_max | Indexing downset 1 pitch index speed max |  |  |  |  |
| 7040 | index\_speed\_average | Indexing downset 1 pitch index speed average |  |  |  |  |
| 7042 | index\_step | Indexing downset 1 pitch index step |  |  |  |  |
| 7044 | power\_during\_indexing\_max | Indexing 12 pitch power during indexing max |  |  |  |  |
| 7045 | power\_during\_indexing\_average | Indexing 12 pitch power during indexing average |  |  |  |  |
| 7046 | torques\_during\_indexing\_max | Indexing 12 pitch torques during indexing max |  |  |  |  |
| 7047 | torques\_during\_indexing\_average | Indexing 12 pitch torques during indexing average |  |  |  |  |
| 7051 | index\_step | Indexing 12 pitch index step |  |  |  |  |
| 7053 | power\_during\_indexing\_max | Indexing at visual inspection 1 pitch power during indexing max |  |  |  |  |
| 7054 | power\_during\_indexing\_average | Indexing at visual inspection 1 pitch power during indexing average |  |  |  |  |
| 7055 | torques\_during\_indexing\_max | Indexing at visual inspection 1 pitch torques during indexing max |  |  |  |  |
| 7056 | torques\_during\_indexing\_average | Indexing at visual inspection 1 pitch torques during indexing average |  |  |  |  |
| 7057 | index\_speed\_max | Indexing at visual inspection 1 pitch index speed max |  |  |  |  |
| 7058 | index\_speed\_average | Indexing at visual inspection 1 pitch index speed average |  |  |  |  |
| 7060 | index\_step | Indexing at visual inspection 1 pitch index step |  |  |  |  |
| 7062 | buffer\_full | Buffer 1 buffer full |  |  |  |  |
| 7063 | buffer\_half\_full | Buffer 1 buffer half full |  |  |  |  |
| 7064 | buffer\_empty | Buffer 1 buffer empty |  |  |  |  |
| 7066 | buffer\_full | Buffer 2 buffer full |  |  |  |  |
| 7067 | buffer\_half\_full | Buffer 2 buffer half full |  |  |  |  |
| 7068 | buffer\_empty | Buffer 2 buffer empty |  |  |  |  |
| 7071 | power\_during\_winding | Output spooler power during winding |  |  |  |  |
| 7072 | buffer\_full | Output spooler buffer full |  |  |  |  |
| 7073 | buffer\_half\_full | Output spooler buffer half full |  |  |  |  |
| 7074 | buffer\_empty | Output spooler buffer empty |  |  |  |  |
| 7075 | interline\_empty | Output spooler interline empty |  |  |  |  |
| 7089 | up\_position\_downset\_tool\_measured | Downset unit up position downset tool measured |  |  |  |  |
| 7091 | down\_position\_downset\_tool\_measured | Downset unit down position downset tool measured |  |  |  |  |
| 7093 | moving\_speed\_downset\_tool\_measured | Downset unit moving speed downset tool measured |  |  |  |  |
| 7095 | up\_position\_support\_plate\_measured | Downset unit up position support plate measured |  |  |  |  |
| 7097 | down\_position\_support\_plate\_measured | Downset unit down position support plate measured |  |  |  |  |
| 7099 | moving\_speed\_support\_plate\_measured | Downset unit moving speed support plate measured |  |  |  |  |
| 7101 | force\_during\_downset\_measured\_max | Downset unit force during downset measured max |  |  |  |  |
| 7102 | force\_during\_downset\_measured\_average | Downset unit force during downset measured average |  |  |  |  |
| 7104 | force\_during\_movement\_measured\_max | Downset unit force during movement measured max |  |  |  |  |
| 7105 | cleaning\_air\_pressure | Downset unit cleaning air pressure |  |  |  |  |
| 7106 | cleaning\_exhaust | Downset unit cleaning exhaust |  |  |  |  |
| 7107 | tape\_lift\_sensor | Downset unit tape lift sensor |  |  |  |  |
| 7162 | tray\_number | JEDEC Tray handler tray number |  |  |  |  |
| 7179 | curing\_force\_max | Pin Curing station curing force max. |  |  |  |  |
| 7180 | curing\_force\_min\_in\_down\_position | Pin Curing station curing force min. in down position |  |  |  |  |
| 7181 | curing\_force\_average\_in\_down\_position | Pin Curing station curing force average in down position |  |  |  |  |
| 7184 | curing\_temperature\_max\_bottom\_zone\_1 | Pin Curing station curing temperature max. bottom zone 1, zone 2, |  |  |  |  |
| 7185 | curing\_temperature\_min\_bottom\_zone\_1 | Pin Curing station curing temperature min. bottom zone 1, zone 2, |  |  |  |  |
| 7186 | curing\_temperature\_average\_bottom\_zone\_1 | Pin Curing station curing temperature average bottom zone 1, zone 2, |  |  |  |  |
| 7189 | curing\_parallelism | Pin Curing station curing parallelism |  |  |  |  |
| 7190 | up\_position\_curing | Pin Curing station up position curing |  |  |  |  |
| 7192 | down\_position\_curing | Pin Curing station down position curing |  |  |  |  |
| 7194 | moving\_speed\_curing\_max | Pin Curing station moving speed curing max |  |  |  |  |
| 7195 | up\_position\_support\_plate | Pin Curing station up position support plate |  |  |  |  |
| 7197 | down\_position\_support\_plate | Pin Curing station down position support plate |  |  |  |  |
| 7199 | moving\_speed\_support\_plate\_max | Pin Curing station moving speed support plate max |  |  |  |  |
| 7200 | power\_for\_all\_motors\_max | Pin Curing station power for all motors max |  |  |  |  |
| 7201 | power\_for\_all\_motors\_average | Pin Curing station power for all motors average |  |  |  |  |
| 7202 | silicon\_paper\_empty | Pin Curing station silicon paper empty |  |  |  |  |
| 7217 | total\_number\_of\_contacting\_cycles | Electrical inline test total number of contacting cycles |  |  |  |  |
| 7218 | pass\_fail\_each\_position | Electrical inline test pass/fail each position |  |  |  |  |
| 7219 | fail\_each\_index\_cycle | Electrical inline test fail each index cycle |  |  |  |  |
| 7220 | tested\_each\_index\_cycle | Electrical inline test tested each index cycle |  |  |  |  |
| 7221 | up\_position\_test\_head | Electrical inline test up position test head |  |  |  |  |
| 7223 | down\_position\_test\_head | Electrical inline test down position test head |  |  |  |  |
| 7225 | moving\_speed\_test\_head\_max | Electrical inline test moving speed test head max |  |  |  |  |
| 7226 | up\_position\_support\_plate | Electrical inline test up position support plate |  |  |  |  |
| 7228 | down\_position\_support\_plate | Electrical inline test down position support plate |  |  |  |  |
| 7230 | moving\_speed\_support\_plate\_max | Electrical inline test moving speed support plate max |  |  |  |  |
| 7231 | force\_max | Electrical inline test force max |  |  |  |  |
| 7232 | force\_average | Electrical inline test force average |  |  |  |  |
| 7235 | pressure | Plasma unit pressure |  |  |  |  |
| 7236 | power | Plasma unit power |  |  |  |  |
| 7237 | runtime | Plasma unit runtime |  |  |  |  |
| 7238 | step\_width | Plasma unit step width |  |  |  |  |
| 7239 | axis\_start\_position | Plasma unit axis start position |  |  |  |  |
| 7240 | axis\_end\_position | Plasma unit axis end position |  |  |  |  |
| 7241 | axis\_standby\_position | Plasma unit axis standby position |  |  |  |  |
| 7242 | temperature | Plasma unit temperature |  |  |  |  |
| 7243 | rotation\_speed\_nozzle | Plasma unit rotation speed nozzle |  |  |  |  |
| 7307 | temperature\_sensor\_1 | Oven for curing temperature sensor 1 |  |  |  |  |
| 7308 | temperature\_sensor\_2 | Oven for curing temperature sensor 2 |  |  |  |  |
| 7309 | temperature\_sensor\_3 | Oven for curing temperature sensor 3 |  |  |  |  |
| 7312 | transport\_speed\_max | Oven for curing transport speed max |  |  |  |  |
| 7313 | transport\_speed\_average | Oven for curing transport speed average |  |  |  |  |
| 7314 | exhaust\_level | Oven for curing exhaust level |  |  |  |  |
| 7315 | cooling\_air\_pressure | Oven for curing cooling air pressure |  |  |  |  |
| 7316 | power\_during\_indexing\_max | Oven for curing power during indexing max |  |  |  |  |
| 7317 | power\_during\_indexing\_min | Oven for curing power during indexing min |  |  |  |  |
| 7318 | power\_during\_indexing\_average | Oven for curing power during indexing average |  |  |  |  |
| 7319 | torques\_during\_indexing\_max | Oven for curing torques during indexing max |  |  |  |  |
| 7320 | torques\_during\_indexing\_min | Oven for curing torques during indexing min |  |  |  |  |
| 7321 | torques\_during\_indexing\_average | Oven for curing torques during indexing average |  |  |  |  |
| 7322 | time\_at\_curing | Oven for curing time at curing |  |  |  |  |
| 7342 | force\_air\_pressure\_during\_punching | Module height measurement force / air pressure during punching |  |  |  |  |
| 7343 | module\_height | Module height measurement result |  |  |  |  |
| 7345 | counter\_for\_track\_1 | Module height measurement counter for track 1 |  |  |  |  |
| 7346 | counter\_for\_track\_2 | Module height measurement counter for track 2 |  |  |  |  |
| 7351 | X\_position | Bad mark punch X position |  |  |  |  |
| 7352 | Y\_position | Bad mark punch Y position |  |  |  |  |
| 7353 | up\_position\_of\_puncher | Bad mark punch up position of puncher |  |  |  |  |
| 7354 | down\_position\_of\_puncher | Bad mark punch down position of puncher |  |  |  |  |
| 7355 | force\_air\_pressure\_during\_punching | Bad mark punch force / air pressure during punching |  |  |  |  |
| 7356 | air\_pressure\_max | Bad mark punch air pressure max |  |  |  |  |
| 7357 | air\_pressure\_avarage | Bad mark punch air pressure avarage |  |  |  |  |
| 7358 | number\_of\_punchings | Bad mark punch number of punchings |  |  |  |  |
| 7157 | Dispense\_AOI\_direct\_light\_level | Dispense AOI direct light level |  |  |  |  |
| 7158 | Dispense\_AOI\_indirect\_light\_level | Dispense AOI indirect light level |  |  |  |  |
| 7165 | Post\_Bond\_Inspection\_module\_pass\_fail | Post-Bond Inspection module pass fail |  |  |  |  |
| 7166 | Post\_Bond\_Inspection\_x\_position\_of\_each\_placed\_module | Post-Bond Inspection x position of each placed module |  |  |  |  |
| 7167 | Post\_Bond\_Inspection\_y\_position\_of\_each\_placed\_module | Post-Bond Inspection y position of each placed module |  |  |  |  |
| 7168 | Post\_Bond\_Inspection\_rotation\_of\_each\_module | Post-Bond Inspection rotation of each module |  |  |  |  |
| 7174 | Post\_Bond\_Inspection\_direct\_light\_level | Post-Bond Inspection direct light level |  |  |  |  |
| 7175 | Post\_Bond\_Inspection\_indirect\_light\_level | Post-Bond Inspection indirect light level |  |  |  |  |
| 7204 | Post\_Final\_Bond\_Inspection\_module\_pass\_fail | Post-Final-Bond Inspection module pass fail |  |  |  |  |
| 7205 | Post\_Final\_Bond\_Inspection\_x\_position\_of\_each\_module | Post-Final-Bond Inspection x position of each module |  |  |  |  |
| 7206 | Post\_Final\_Bond\_Inspection\_y\_position\_of\_each\_module | Post-Final-Bond Inspection y position of each module |  |  |  |  |
| 7207 | Post\_Final\_Bond\_Inspection\_rotation\_of\_each\_module | Post-Final-Bond Inspection rotation of each module |  |  |  |  |
| 7212 | Post\_Final\_Bond\_Inspection\_detecting\_level\_spec\_min | Post-Final-Bond Inspection detecting level spec min each programmed area |  |  |  |  |
| 7213 | Post\_Final\_Bond\_Inspection\_detecting\_level\_spec\_max | Post-Final-Bond Inspection detecting level spec max each programmed area |  |  |  |  |
| 7214 | Post\_Final\_Bond\_Inspection\_direct\_light\_level | Post-Final-Bond Inspection direct light level |  |  |  |  |
| 7215 | Post\_Final\_Bond\_Inspection\_indirect\_light\_level | Post-Final-Bond Inspection indirect light level |  |  |  |  |
| 7291 | Sealing\_AOI\_module\_pass\_fail | Sealing AOI module pass fail |  |  |  |  |
| 7292 | Sealing\_AOI\_x\_position\_of\_each\_dot\_measured | Sealing AOI x position of each dot measured |  |  |  |  |
| 7293 | Sealing\_AOI\_y\_position\_of\_each\_dot\_measured | Sealing AOI y position of each dot measured |  |  |  |  |
| 7295 | Sealing\_AOI\_detecting\_level\_glue\_area\_ | Sealing AOI detecting level glue area for each programmed area on each module |  |  |  |  |
| 7297 | Sealing\_AOI\_detecting\_level\_no\_glue\_area\_\_ | Sealing AOI detecting level no glue area for each programmed area |  |  |  |  |
| 7301 | Sealing\_AOI\_direct\_light\_level | Sealing AOI direct light level |  |  |  |  |
| 7302 | Sealing\_AOI\_indirect\_light\_level | Sealing AOI indirect light level |  |  |  |  |
| 7326 | VI\_module\_assembly\_module\_pass\_fail | VI module (assembly side) module pass fail |  |  |  |  |
| 7327 | VI\_module\_assembly\_detecting\_level\_abnormality | VI module (assembly side) detecting level abnormality for each programmed area on each module |  |  |  |  |
| 7331 | VI\_module\_assembly\_direct\_light\_level | VI module (assembly side) direct light level |  |  |  |  |
| 7332 | VI\_module\_assembly\_indirect\_light\_level | VI module (assembly side) indirect light level |  |  |  |  |
| 7334 | VI\_module\_ISO\_module\_pass\_fail | VI module (ISO side) module pass fail |  |  |  |  |
| 7335 | VI\_module\_ISO\_detecting\_level\_abnormality | VI module (ISO side) detecting level abnormality for each programmed area on each module |  |  |  |  |
| 7339 | VI\_module\_ISO\_direct\_light\_level | VI module (ISO side) direct light level |  |  |  |  |
| 7340 | VI\_module\_ISO\_indirect\_light\_level | VI module (ISO side) indirect light level |  |  |  |  |
| 7150 | Dispense\_AOI\_Jetter\_ID\_of\_dispensed\_module | Dispense AOI Jetter ID of dispensed module |  |  |  |  |
| 7188 | Pin\_Curing\_station\_position\_in\_curing\_station | Pin Curing station position in curing station |  |  |  |  |
| 7208 | Final\_Bond\_Inspection\_stamp\_of\_curing\_station | Post-Final-Bond Inspection stamp of curing station/ position in Curing station |  |  |  |  |
| 7294 | Sealing\_AOI\_Jetter\_ID\_of\_dispensed\_module | Sealing AOI Jetter ID of dispensed module |  |  |  |  |
| 7077 | Input\_bad\_hole\_detection\_unit\_bad\_hole\_detected\_yes\_no | Input bad hole detection unit bad hole detected yes/no |  |  |  |  |
| 7078 | Input\_bad\_hole\_detection\_unit\_X\_position\_tape | Input bad hole detection unit X position tape |  |  |  |  |
| 7079 | Input\_bad\_hole\_detection\_unit\_y\_position\_tape | Input bad hole detection unit y position tape |  |  |  |  |
| 7082 | Input\_bad\_hole\_detection\_unit\_detecting\_level\_measured | Input bad hole detection unit detecting level measured |  |  |  |  |
| 7085 | Input\_bad\_hole\_detection\_unit\_offset\_correction | Input bad hole detection unit offset correction |  |  |  |  |
| 7086 | Input\_bad\_hole\_detection\_unit\_light\_level\_track\_1 | Input bad hole detection unit light level track 1 |  |  |  |  |
| 7087 | Input\_bad\_hole\_detection\_unit\_light\_level\_track\_2 | Input bad hole detection unit light level track 2 |  |  |  |  |
| 7147 | Dispense\_AOI\_module\_pass\_fail | Dispense AOI module pass fail |  |  |  |  |
| 7148 | Dispense\_AOI\_x\_position\_of\_each\_dot\_measured | Dispense AOI x position of each dot measured |  |  |  |  |
| 7149 | Dispense\_AOI\_y\_position\_of\_each\_dot\_measured | Dispense AOI y position of each dot measured |  |  |  |  |
| 7151 | Dispense\_AOI\_detecting\_level\_glue\_area | Dispense AOI detecting level glue area |  |  |  |  |
| 7153 | Dispense\_AOI\_detecting\_level\_no\_glue\_area | Dispense AOI detecting level no glue area |  |  |  |  |
| 7002 | Lot\_counter | Logistics Lot lot counter / module counter (built up modules per lot) |  |  |  |  |
| 7003 | Lot\_date\_time | Logistics Lot date/time |  |  |  |  |
| 7023 | Failure\_messages\_Log\_File | Logistics failure messages Log Files for Log file analysis |  |  |  |  |
| 7025 | Bin\_code\_module | Logistics shift register Bin code module (for each finished module, equipment end) |  |  |  |  |
| 7178 | Curing\_station\_curing\_time\_measured | Pin Curing station curing time measured |  |  |  |  |
| 8109 | Jetter\_dispense\_unit\_01\_air\_pressure | Jetter dispense unit 01 air pressure |  |  |  |  |
| 8119 | Jetter\_dispense\_unit\_01\_X\_moving\_speed\_measured\_max | Jetter dispense unit 01 X moving speed measured max |  |  |  |  |
| 8120 | Jetter\_dispense\_unit\_01\_y\_moving\_speed\_measured\_max | Jetter dispense unit 01 y moving speed measured max |  |  |  |  |
| 8123 | Jetter\_dispense\_unit\_01\_X\_work\_position\_measured | Jetter dispense unit 01 X work position measured |  |  |  |  |
| 8124 | Jetter\_dispense\_unit\_01\_y\_work\_position\_measured | Jetter dispense unit 01 y work position measured |  |  |  |  |
| 8127 | Jetter\_dispense\_unit\_01\_counter\_pulses | Jetter dispense unit 01 counter pulses |  |  |  |  |
| 8129 | Jetter\_dispense\_unit\_01\_counter\_cleaning\_cycles | Jetter dispense unit 01 counter cleaning cycles |  |  |  |  |
| 8132 | Jetter\_dispense\_unit\_01\_module\_detected\_yes\_no | Jetter dispense unit 01 module detected yes no |  |  |  |  |
| 8133 | Jetter\_dispense\_unit\_01\_detecting\_level | Jetter dispense unit 01 detecting level |  |  |  |  |
| 8136 | Jetter\_dispense\_unit\_01\_module\_offset\_correction\_X | Jetter dispense unit 01 module offset correction X |  |  |  |  |
| 8137 | Jetter\_dispense\_unit\_01\_module\_offset\_correction\_Y | Jetter dispense unit 01 module offset correction Y |  |  |  |  |
| 8138 | Jetter\_dispense\_unit\_01\_direct\_light\_level | Jetter dispense unit 01 direct light level |  |  |  |  |
| 8139 | Jetter\_dispense\_unit\_01\_indirect\_light\_level | Jetter dispense unit 01 indirect light level |  |  |  |  |
| 8209 | Jetter\_dispense\_unit\_02\_air\_pressure | Jetter dispense unit 02 air pressure |  |  |  |  |
| 8219 | Jetter\_dispense\_unit\_02\_X\_moving\_speed\_measured\_max | Jetter dispense unit 02 X moving speed measured max |  |  |  |  |
| 8220 | Jetter\_dispense\_unit\_02\_y\_moving\_speed\_measured\_max | Jetter dispense unit 02 y moving speed measured max |  |  |  |  |
| 8223 | Jetter\_dispense\_unit\_02\_X\_work\_position\_measured | Jetter dispense unit 02 X work position measured |  |  |  |  |
| 8224 | Jetter\_dispense\_unit\_02\_y\_work\_position\_measured | Jetter dispense unit 02 y work position measured |  |  |  |  |
| 8227 | Jetter\_dispense\_unit\_02\_counter\_pulses | Jetter dispense unit 02 counter pulses |  |  |  |  |
| 8229 | Jetter\_dispense\_unit\_02\_counter\_cleaning\_cycles | Jetter dispense unit 02 counter cleaning cycles |  |  |  |  |
| 8232 | Jetter\_dispense\_unit\_02\_module\_detected\_yes\_no | Jetter dispense unit 02 module detected yes no |  |  |  |  |
| 8233 | Jetter\_dispense\_unit\_02\_detecting\_level | Jetter dispense unit 02 detecting level |  |  |  |  |
| 8236 | Jetter\_dispense\_unit\_02\_module\_offset\_correction\_X | Jetter dispense unit 02 module offset correction X |  |  |  |  |
| 8237 | Jetter\_dispense\_unit\_02\_module\_offset\_correction\_Y | Jetter dispense unit 02 module offset correction Y |  |  |  |  |
| 8238 | Jetter\_dispense\_unit\_02\_direct\_light\_level | Jetter dispense unit 02 direct light level |  |  |  |  |
| 8239 | Jetter\_dispense\_unit\_02\_indirect\_light\_level | Jetter dispense unit 02 indirect light level |  |  |  |  |
| 8309 | Jetter\_dispense\_unit\_03\_air\_pressure | Jetter dispense unit 03 air pressure |  |  |  |  |
| 8319 | Jetter\_dispense\_unit\_03\_X\_moving\_speed\_measured\_max | Jetter dispense unit 03 X moving speed measured max |  |  |  |  |
| 8320 | Jetter\_dispense\_unit\_03\_y\_moving\_speed\_measured\_max | Jetter dispense unit 03 y moving speed measured max |  |  |  |  |
| 8323 | Jetter\_dispense\_unit\_03\_X\_work\_position\_measured | Jetter dispense unit 03 X work position measured |  |  |  |  |
| 8324 | Jetter\_dispense\_unit\_03\_y\_work\_position\_measured | Jetter dispense unit 03 y work position measured |  |  |  |  |
| 8327 | Jetter\_dispense\_unit\_03\_counter\_pulses | Jetter dispense unit 03 counter pulses |  |  |  |  |
| 8329 | Jetter\_dispense\_unit\_03\_counter\_cleaning\_cycles | Jetter dispense unit 03 counter cleaning cycles |  |  |  |  |
| 8332 | Jetter\_dispense\_unit\_03\_module\_detected\_yes\_no | Jetter dispense unit 03 module detected yes no |  |  |  |  |
| 8333 | Jetter\_dispense\_unit\_03\_detecting\_level | Jetter dispense unit 03 detecting level |  |  |  |  |
| 8336 | Jetter\_dispense\_unit\_03\_module\_offset\_correction\_X | Jetter dispense unit 03 module offset correction X |  |  |  |  |
| 8337 | Jetter\_dispense\_unit\_03\_module\_offset\_correction\_Y | Jetter dispense unit 03 module offset correction Y |  |  |  |  |
| 8338 | Jetter\_dispense\_unit\_03\_direct\_light\_level | Jetter dispense unit 03 direct light level |  |  |  |  |
| 8339 | Jetter\_dispense\_unit\_03\_indirect\_light\_level | Jetter dispense unit 03 indirect light level |  |  |  |  |
| 8409 | Jetter\_dispense\_unit\_04\_air\_pressure | Jetter dispense unit 04 air pressure |  |  |  |  |
| 8419 | Jetter\_dispense\_unit\_04\_X\_moving\_speed\_measured\_max | Jetter dispense unit 04 X moving speed measured max |  |  |  |  |
| 8420 | Jetter\_dispense\_unit\_04\_y\_moving\_speed\_measured\_max | Jetter dispense unit 04 y moving speed measured max |  |  |  |  |
| 8423 | Jetter\_dispense\_unit\_04\_X\_work\_position\_measured | Jetter dispense unit 04 X work position measured |  |  |  |  |
| 8424 | Jetter\_dispense\_unit\_04\_y\_work\_position\_measured | Jetter dispense unit 04 y work position measured |  |  |  |  |
| 8427 | Jetter\_dispense\_unit\_04\_counter\_pulses | Jetter dispense unit 04 counter pulses |  |  |  |  |
| 8429 | Jetter\_dispense\_unit\_04\_counter\_cleaning\_cycles | Jetter dispense unit 04 counter cleaning cycles |  |  |  |  |
| 8432 | Jetter\_dispense\_unit\_04\_module\_detected\_yes\_no | Jetter dispense unit 04 module detected yes no |  |  |  |  |
| 8433 | Jetter\_dispense\_unit\_04\_detecting\_level | Jetter dispense unit 04 detecting level |  |  |  |  |
| 8436 | Jetter\_dispense\_unit\_04\_module\_offset\_correction\_X | Jetter dispense unit 04 module offset correction X |  |  |  |  |
| 8437 | Jetter\_dispense\_unit\_04\_module\_offset\_correction\_Y | Jetter dispense unit 04 module offset correction Y |  |  |  |  |
| 8438 | Jetter\_dispense\_unit\_04\_direct\_light\_level | Jetter dispense unit 04 direct light level |  |  |  |  |
| 8439 | Jetter\_dispense\_unit\_04\_indirect\_light\_level | Jetter dispense unit 04 indirect light level |  |  |  |  |
| 8509 | Jetter\_dispense\_unit\_05\_air\_pressure | Jetter dispense unit 05 air pressure |  |  |  |  |
| 8519 | Jetter\_dispense\_unit\_05\_X\_moving\_speed\_measured\_max | Jetter dispense unit 05 X moving speed measured max |  |  |  |  |
| 8520 | Jetter\_dispense\_unit\_05\_y\_moving\_speed\_measured\_max | Jetter dispense unit 05 y moving speed measured max |  |  |  |  |
| 8523 | Jetter\_dispense\_unit\_05\_X\_work\_position\_measured | Jetter dispense unit 05 X work position measured |  |  |  |  |
| 8524 | Jetter\_dispense\_unit\_05\_y\_work\_position\_measured | Jetter dispense unit 05 y work position measured |  |  |  |  |
| 8527 | Jetter\_dispense\_unit\_05\_counter\_pulses | Jetter dispense unit 05 counter pulses |  |  |  |  |
| 8529 | Jetter\_dispense\_unit\_05\_counter\_cleaning\_cycles | Jetter dispense unit 05 counter cleaning cycles |  |  |  |  |
| 8532 | Jetter\_dispense\_unit\_05\_module\_detected\_yes\_no | Jetter dispense unit 05 module detected yes no |  |  |  |  |
| 8533 | Jetter\_dispense\_unit\_05\_detecting\_level | Jetter dispense unit 05 detecting level |  |  |  |  |
| 8536 | Jetter\_dispense\_unit\_05\_module\_offset\_correction\_X | Jetter dispense unit 05 module offset correction X |  |  |  |  |
| 8537 | Jetter\_dispense\_unit\_05\_module\_offset\_correction\_Y | Jetter dispense unit 05 module offset correction Y |  |  |  |  |
| 8538 | Jetter\_dispense\_unit\_05\_direct\_light\_level | Jetter dispense unit 05 direct light level |  |  |  |  |
| 8539 | Jetter\_dispense\_unit\_05\_indirect\_light\_level | Jetter dispense unit 05 indirect light level |  |  |  |  |
| 8609 | Jetter\_dispense\_unit\_06\_air\_pressure | Jetter dispense unit 06 air pressure |  |  |  |  |
| 8619 | Jetter\_dispense\_unit\_06\_X\_moving\_speed\_measured\_max | Jetter dispense unit 06 X moving speed measured max |  |  |  |  |
| 8620 | Jetter\_dispense\_unit\_06\_y\_moving\_speed\_measured\_max | Jetter dispense unit 06 y moving speed measured max |  |  |  |  |
| 8623 | Jetter\_dispense\_unit\_06\_X\_work\_position\_measured | Jetter dispense unit 06 X work position measured |  |  |  |  |
| 8624 | Jetter\_dispense\_unit\_06\_y\_work\_position\_measured | Jetter dispense unit 06 y work position measured |  |  |  |  |
| 8627 | Jetter\_dispense\_unit\_06\_counter\_pulses | Jetter dispense unit 06 counter pulses |  |  |  |  |
| 8629 | Jetter\_dispense\_unit\_06\_counter\_cleaning\_cycles | Jetter dispense unit 06 counter cleaning cycles |  |  |  |  |
| 8632 | Jetter\_dispense\_unit\_06\_module\_detected\_yes\_no | Jetter dispense unit 06 module detected yes no |  |  |  |  |
| 8633 | Jetter\_dispense\_unit\_06\_detecting\_level | Jetter dispense unit 06 detecting level |  |  |  |  |
| 8636 | Jetter\_dispense\_unit\_06\_module\_offset\_correction\_X | Jetter dispense unit 06 module offset correction X |  |  |  |  |
| 8637 | Jetter\_dispense\_unit\_06\_module\_offset\_correction\_Y | Jetter dispense unit 06 module offset correction Y |  |  |  |  |
| 8638 | Jetter\_dispense\_unit\_06\_direct\_light\_level | Jetter dispense unit 06 direct light level |  |  |  |  |
| 8639 | Jetter\_dispense\_unit\_06\_indirect\_light\_level | Jetter dispense unit 06 indirect light level |  |  |  |  |
| 7453 | Jetter\_sealing\_01\_air\_pressure | Jetter sealing unit 01 air pressure |  |  |  |  |
| 7463 | Jetter\_sealing\_01\_X\_moving\_speed\_measured\_max | Jetter sealing unit 01 X moving speed measured max |  |  |  |  |
| 7464 | Jetter\_sealing\_01\_y\_moving\_speed\_measured\_max | Jetter sealing unit 01 y moving speed measured max |  |  |  |  |
| 7467 | Jetter\_sealing\_01\_X\_work\_position\_measured | Jetter sealing unit 01 X work position measured |  |  |  |  |
| 7468 | Jetter\_sealing\_01\_y\_work\_position\_measured | Jetter sealing unit 01 y work position measured |  |  |  |  |
| 7471 | Jetter\_sealing\_01\_counter\_pulses | Jetter sealing unit 01 counter pulses |  |  |  |  |
| 7473 | Jetter\_sealing\_01\_counter\_cleaning\_cycles | Jetter sealing unit 01 counter cleaning cycles |  |  |  |  |
| 7476 | Jetter\_sealing\_01\_module\_detected\_yes\_no | Jetter sealing unit 01 module detected yes no |  |  |  |  |
| 7477 | Jetter\_sealing\_01\_detecting\_level | Jetter sealing unit 01 detecting level |  |  |  |  |
| 7480 | Jetter\_sealing\_01\_module\_offset\_correction\_X\_ | Jetter sealing unit 01 module offset correction X |  |  |  |  |
| 7481 | Jetter\_sealing\_01\_module\_offset\_correction\_Y | Jetter sealing unit 01 module offset correction Y |  |  |  |  |
| 7482 | Jetter\_sealing\_01\_direct\_light\_level | Jetter sealing unit 01 direct light level |  |  |  |  |
| 7483 | Jetter\_sealing\_01\_indirect\_light\_level | Jetter sealing unit 01 indirect light level |  |  |  |  |
| 7553 | Jetter\_sealing\_02\_air\_pressure | Jetter sealing unit 02 air pressure |  |  |  |  |
| 7563 | Jetter\_sealing\_02\_X\_moving\_speed\_measured\_max | Jetter sealing unit 02 X moving speed measured max |  |  |  |  |
| 7564 | Jetter\_sealing\_02\_y\_moving\_speed\_measured\_max | Jetter sealing unit 02 y moving speed measured max |  |  |  |  |
| 7567 | Jetter\_sealing\_02\_X\_work\_position\_measured | Jetter sealing unit 02 X work position measured |  |  |  |  |
| 7568 | Jetter\_sealing\_02\_y\_work\_position\_measured | Jetter sealing unit 02 y work position measured |  |  |  |  |
| 7571 | Jetter\_sealing\_02\_counter\_pulses | Jetter sealing unit 02 counter pulses |  |  |  |  |
| 7573 | Jetter\_sealing\_02\_counter\_cleaning\_cycles | Jetter sealing unit 02 counter cleaning cycles |  |  |  |  |
| 7576 | Jetter\_sealing\_02\_module\_detected\_yes\_no | Jetter sealing unit 02 module detected yes no |  |  |  |  |
| 7577 | Jetter\_sealing\_02\_detecting\_level | Jetter sealing unit 02 detecting level |  |  |  |  |
| 7580 | Jetter\_sealing\_02\_module\_offset\_correction\_X\_ | Jetter sealing unit 02 module offset correction X |  |  |  |  |
| 7581 | Jetter\_sealing\_02\_module\_offset\_correction\_Y | Jetter sealing unit 02 module offset correction Y |  |  |  |  |
| 7582 | Jetter\_sealing\_02\_direct\_light\_level | Jetter sealing unit 02 direct light level |  |  |  |  |
| 7583 | Jetter\_sealing\_02\_indirect\_light\_level | Jetter sealing unit 02 indirect light level |  |  |  |  |
| 7653 | Jetter\_sealing\_03\_air\_pressure | Jetter sealing unit 03 air pressure |  |  |  |  |
| 7663 | Jetter\_sealing\_03\_X\_moving\_speed\_measured\_max | Jetter sealing unit 03 X moving speed measured max |  |  |  |  |
| 7664 | Jetter\_sealing\_03\_y\_moving\_speed\_measured\_max | Jetter sealing unit 03 y moving speed measured max |  |  |  |  |
| 7667 | Jetter\_sealing\_03\_X\_work\_position\_measured | Jetter sealing unit 03 X work position measured |  |  |  |  |
| 7668 | Jetter\_sealing\_03\_y\_work\_position\_measured | Jetter sealing unit 03 y work position measured |  |  |  |  |
| 7671 | Jetter\_sealing\_03\_counter\_pulses | Jetter sealing unit 03 counter pulses |  |  |  |  |
| 7673 | Jetter\_sealing\_03\_counter\_cleaning\_cycles | Jetter sealing unit 03 counter cleaning cycles |  |  |  |  |
| 7676 | Jetter\_sealing\_03\_module\_detected\_yes\_no | Jetter sealing unit 03 module detected yes no |  |  |  |  |
| 7677 | Jetter\_sealing\_03\_detecting\_level | Jetter sealing unit 03 detecting level |  |  |  |  |
| 7680 | Jetter\_sealing\_03\_module\_offset\_correction\_X\_ | Jetter sealing unit 03 module offset correction X |  |  |  |  |
| 7681 | Jetter\_sealing\_03\_module\_offset\_correction\_Y | Jetter sealing unit 03 module offset correction Y |  |  |  |  |
| 7682 | Jetter\_sealing\_03\_direct\_light\_level | Jetter sealing unit 03 direct light level |  |  |  |  |
| 7683 | Jetter\_sealing\_03\_indirect\_light\_level | Jetter sealing unit 03 indirect light level |  |  |  |  |
| 7753 | Jetter\_sealing\_04\_air\_pressure | Jetter sealing unit 04 air pressure |  |  |  |  |
| 7763 | Jetter\_sealing\_04\_X\_moving\_speed\_measured\_max | Jetter sealing unit 04 X moving speed measured max |  |  |  |  |
| 7764 | Jetter\_sealing\_04\_y\_moving\_speed\_measured\_max | Jetter sealing unit 04 y moving speed measured max |  |  |  |  |
| 7767 | Jetter\_sealing\_04\_X\_work\_position\_measured | Jetter sealing unit 04 X work position measured |  |  |  |  |
| 7768 | Jetter\_sealing\_04\_y\_work\_position\_measured | Jetter sealing unit 04 y work position measured |  |  |  |  |
| 7771 | Jetter\_sealing\_04\_counter\_pulses | Jetter sealing unit 04 counter pulses |  |  |  |  |
| 7773 | Jetter\_sealing\_04\_counter\_cleaning\_cycles | Jetter sealing unit 04 counter cleaning cycles |  |  |  |  |
| 7776 | Jetter\_sealing\_04\_module\_detected\_yes\_no | Jetter sealing unit 04 module detected yes no |  |  |  |  |
| 7777 | Jetter\_sealing\_04\_detecting\_level | Jetter sealing unit 04 detecting level |  |  |  |  |
| 7780 | Jetter\_sealing\_04\_module\_offset\_correction\_X\_ | Jetter sealing unit 04 module offset correction X |  |  |  |  |
| 7781 | Jetter\_sealing\_04\_module\_offset\_correction\_Y | Jetter sealing unit 04 module offset correction Y |  |  |  |  |
| 7782 | Jetter\_sealing\_04\_direct\_light\_level | Jetter sealing unit 04 direct light level |  |  |  |  |
| 7783 | Jetter\_sealing\_04\_indirect\_light\_level | Jetter sealing unit 04 indirect light level |  |  |  |  |
| 7853 | Jetter\_sealing\_05\_air\_pressure | Jetter sealing unit 05 air pressure |  |  |  |  |
| 7863 | Jetter\_sealing\_05\_X\_moving\_speed\_measured\_max | Jetter sealing unit 05 X moving speed measured max |  |  |  |  |
| 7864 | Jetter\_sealing\_05\_y\_moving\_speed\_measured\_max | Jetter sealing unit 05 y moving speed measured max |  |  |  |  |
| 7867 | Jetter\_sealing\_05\_X\_work\_position\_measured | Jetter sealing unit 05 X work position measured |  |  |  |  |
| 7868 | Jetter\_sealing\_05\_y\_work\_position\_measured | Jetter sealing unit 05 y work position measured |  |  |  |  |
| 7871 | Jetter\_sealing\_05\_counter\_pulses | Jetter sealing unit 05 counter pulses |  |  |  |  |
| 7873 | Jetter\_sealing\_05\_counter\_cleaning\_cycles | Jetter sealing unit 05 counter cleaning cycles |  |  |  |  |
| 7876 | Jetter\_sealing\_05\_module\_detected\_yes\_no | Jetter sealing unit 05 module detected yes no |  |  |  |  |
| 7877 | Jetter\_sealing\_05\_detecting\_level | Jetter sealing unit 05 detecting level |  |  |  |  |
| 7880 | Jetter\_sealing\_05\_module\_offset\_correction\_X\_ | Jetter sealing unit 05 module offset correction X |  |  |  |  |
| 7881 | Jetter\_sealing\_05\_module\_offset\_correction\_Y | Jetter sealing unit 05 module offset correction Y |  |  |  |  |
| 7882 | Jetter\_sealing\_05\_direct\_light\_level | Jetter sealing unit 05 direct light level |  |  |  |  |
| 7883 | Jetter\_sealing\_05\_indirect\_light\_level | Jetter sealing unit 05 indirect light level |  |  |  |  |
| 7953 | Jetter\_sealing\_06\_air\_pressure | Jetter sealing unit 06 air pressure |  |  |  |  |
| 7963 | Jetter\_sealing\_06\_X\_moving\_speed\_measured\_max | Jetter sealing unit 06 X moving speed measured max |  |  |  |  |
| 7964 | Jetter\_sealing\_06\_y\_moving\_speed\_measured\_max | Jetter sealing unit 06 y moving speed measured max |  |  |  |  |
| 7967 | Jetter\_sealing\_06\_X\_work\_position\_measured | Jetter sealing unit 06 X work position measured |  |  |  |  |
| 7968 | Jetter\_sealing\_06\_y\_work\_position\_measured | Jetter sealing unit 06 y work position measured |  |  |  |  |
| 7971 | Jetter\_sealing\_06\_counter\_pulses | Jetter sealing unit 06 counter pulses |  |  |  |  |
| 7973 | Jetter\_sealing\_06\_counter\_cleaning\_cycles | Jetter sealing unit 06 counter cleaning cycles |  |  |  |  |
| 7976 | Jetter\_sealing\_06\_module\_detected\_yes\_no | Jetter sealing unit 06 module detected yes no |  |  |  |  |
| 7977 | Jetter\_sealing\_06\_detecting\_level | Jetter sealing unit 06 detecting level |  |  |  |  |
| 7980 | Jetter\_sealing\_06\_module\_offset\_correction\_X\_ | Jetter sealing unit 06 module offset correction X |  |  |  |  |
| 7981 | Jetter\_sealing\_06\_module\_offset\_correction\_Y | Jetter sealing unit 06 module offset correction Y |  |  |  |  |
| 7982 | Jetter\_sealing\_06\_direct\_light\_level | Jetter sealing unit 06 direct light level |  |  |  |  |
| 7983 | Jetter\_sealing\_06\_indirect\_light\_level | Jetter sealing unit 06 indirect light level |  |  |  |  |
| 9000 | ExecuteRemoteCommandResponseData | ExecuteRemoteCommandResponseData returned | A |  |  |  |
| 9001 | GetProductsResponseData | GetProductsResponseData returned | A |  |  |  |
| 9002 | SelectProductResponseData | SelectProductResponseData returned | A |  |  |  |
| 9003 | DownloadProductResponseData | DownloadProductResponseData returned | A |  |  |  |
| 9004 | UploadProductResponseData | UploadProductResponseData returned | A |  |  |  |
| 9005 | SetTerminalMessageResponseData | SetTerminalMessageResponseData returned | A |  |  |  |
| 9006 | GetUsersResponseData | GetUsersResponseData returned | A |  |  |  |
| 9007 | GetLoggedInUsersResponseData | GetLoggedInUsersResponseData returned | A |  |  |  |
| 9008 | CreateLotResponseData | CreateLotResponseData returned | A |  |  |  |
| 9009 | GetLotResponseData | GetLotResponseData returned | A |  |  |  |
| 9010 | GetLotsResponseData | GetLotsResponseData returned | A |  |  |  |
| 9011 | UpdateLotResponseData | UpdateLotResponseData returned | A |  |  |  |
| 9012 | DeleteLotResponseData | DeleteLotResponseData returned | A |  |  |  |
| 9013 | RenameProductResponseData | RenameProductResponseData returned | A |  |  |  |
| 9050 | VariableChangedData | VariableChangedData returned | A |  |  |  |
| 9051 | ModuleProcessStateChangedData | ModuleProcessStateChangedData returned | A |  |  |  |
| 9052 | MaterialReceivedData | MaterialReceivedData returned | A |  |  |  |
| 9053 | MaterialProcessedData | MaterialProcessedData returned | A |  |  |  |
| 9054 | MaterialRemovedData | MaterialRemovedData returned | A |  |  |  |
| 9055 | UserLoggedInData | UserLoggedInData returned | A |  |  |  |
| 9056 | UserLoggedOutData | UserLoggedOutData returned | A |  |  |  |
| 9057 | UserCreatedData | UserCreatedData returned | A |  |  |  |
| 9058 | UserDeletedData | UserDeletedData returned | A |  |  |  |
| 9059 | ControlStateChangedData | ControlStateChangedData returned | A |  |  |  |
| 9060 | LotCreatedData | LotCreatedData returned | A |  |  |  |
| 9061 | LotDeletedData | LotDeletedData returned | A |  |  |  |
| 9062 | LotStartedData | LotStartedData returned | A |  |  |  |
| 9063 | LotCompletedData | LotCompletedData returned | A |  |  |  |
| 9064 | LotAbortedData | LotAbortedData returned | A |  |  |  |
| 9065 | LotPausedData | LotPausedData returned | A |  |  |  |
| 9066 | LotResumedData | LotResumedData returned | A |  |  |  |
| 9067 | ProductCreatedData | ProductCreatedData returned | A |  |  |  |
| 9068 | ProductSelectedData | ProductSelectedData returned | A |  |  |  |
| 9069 | ProductDeletedData | ProductDeletedData returned | A |  |  |  |
| 9070 | ProductStoredData | ProductStoredData returned | A |  |  |  |
| 9071 | ProductDownloadedData | ProductDownloadedData returned | A |  |  |  |
| 9072 | OperatorCommandExecutedData | OperatorCommandExecutedData returned | A |  |  |  |
| 9073 | ItemsProcessStartedData | ItemsProcessStartedData returned | A |  |  |  |
| 9074 | ItemsProcessCompletedData | ItemsProcessCompletedData returned | A |  |  |  |
| 9075 | ItemProcessStartedData | ItemProcessStartedData returned | A |  |  |  |
| 9076 | ItemProcessCompletedData | ItemProcessCompletedData returned | A |  |  |  |
| 9077 | LotCompleted\_Name | LotCompleted\_Name\_Data returned | A |  |  |  |
| 9078 | LotCompleted\_Count | LotCompleted\_Count\_Data returned | I4 |  |  |  |
| 9079 | LotCompleted\_Product | LotCompleted\_Product\_Data returned | A |  |  |  |
| 9080 | LotCompleted\_BadCount | LotCompleted\_BadCount\_Data returned | I4 |  |  |  |
| 9081 | LotCompleted\_GoodCount | LotCompleted\_GoodCount\_Data returned | I4 |  |  |  |
| 9082 | LotCompleted\_Yield | LotCompleted\_Yield\_Data returned | F4 |  |  |  |
| 9083 | LotCompleted\_StartTime | LotCompleted\_StartTime\_Data returned | A |  |  |  |
| 9084 | LotCompleted\_EndTime | LotCompleted\_EndTime\_Data returned | A |  |  |  |
| 9085 | LotCompleted\_AssemblyLotID | LotCompleted\_AssemblyLotID\_Data returned | A |  |  |  |
| 9086 | LotCompleted\_AssemblyLotQty | LotCompleted\_AssemblyLotQty\_Data returned | I4 |  |  |  |
| 9087 | LotCompleted\_AssemblyLotRejects | LotCompleted\_AssemblyLotRejects\_Data returned | L |  |  |  |
| 9088 | MaterialReport\_LotName | MaterialReport\_LotName\_Data returned | A |  |  |  |
| 9089 | MaterialReport\_AssemblyLotID | MaterialReport\_AssemblyLotID\_Data returned | A |  |  |  |
| 9090 | MaterialReport\_MaterialId | MaterialReport\_MaterialId\_Data returned | A |  |  |  |
| 9091 | MaterialReport\_MaterialConsumption | MaterialReport\_MaterialConsumption\_Data returned | A |  |  |  |
| 9092 | MaterialReport\_LGARejects | MaterialReport\_LGARejects\_Data returned | L |  |  |  |
| 9093 | LotCompleted\_AssemblyLotRejects\_Val | LotCompleted\_AssemblyLotRejects\_Val\_Data returned | L |  |  |  |
| 9094 | MaterialReport\_LGARejects\_Val | MaterialReport\_LGARejects\_Val\_Data returned | L |  |  |  |
| 9095 | ItemCompletedData | ItemCompletedData\_Data returned | I4 |  |  |  |
| 9096 | VariableChanged\_Name | VariableChangedName returned | A |  |  |  |
| 9097 | VariableChanged\_ObjectType | VariableChangedObjectType returned | A |  |  |  |
| 9098 | VariableChanged\_DataType | VariableChangedDataType returned | A |  |  |  |
| 9099 | VariableChanged\_Value | VariableChangedValue returned | A |  |  |  |
| 9100 | SiplaceData | SiplaceData returned | A |  |  |  |

## All Status Variables

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SVID** | **Variable Name** | **Description** | **Type** | **Min** | **Max** | **Default Value** |
| 2004 | Clock | The value of the equipment’s internal clock | A |  |  |  |
| 2008 | MDLN | Equipment model type up to 20 characters | A |  |  | MODEL |
| 2009 | PPExecName | Currently selected process program (recipe) | A |  |  |  |
| 2015 | SOFTREV | Equipment software revision ID up to 20 characters | A |  |  | 00.01 |
| 2026 | ALARMSENABLED | List of all enabled ALID. | L |  |  |  |
| 2027 | ALARMSSET | List of all SET ALID. | L |  |  |  |
| 2028 | CONTROLSTATE | State of the Control State Machine | U1 | 0 | 5 | 4 |
| 2029 | EVENTSENABLED | List of all enabled CEID. | L |  |  |  |
| 2030 | PreviousProcessState | Previous Processing State Machine state. | U1 | 0 | 255 |  |
| 2031 | ProcessState | Current Processing State Machine state. | U1 | 0 | 255 |  |
| 2032 | ProcessStateString | Name of the current Processing State Machine state. | A |  |  |  |
| 2033 | ControlStateSwitch | The GEM local/remote control switch | U4 | 0 | 1 | 0 |
| 2034 | CtrlOnlineSwitch | The GEM online/offline control switch | U4 | 0 | 1 | 1 |
| 2035 | CommEnableSwitch | The GEM communications enable/disable operator switch | U4 |  |  | 256 |
| 2036 | CommState | The current state of the GEM communications state machine | U4 |  |  | 260 |
| 2037 | SpoolState | The current state of the GEM spooling state machine | U4 |  |  | 0 |
| 2039 | NVSPath | Non-volatile storage directory. | A |  |  | TBD |
| 2040 | RecipeHandling | Process program (recipe) handling type (0-None 1-File-Based 2-Value-Based) | U4 | 0 | 2 | 1 |
| 2041 | RecipeType | Process program (recipe) format (0-binary 1-ASCII) | U4 | 0 | 1 | 1 |
| 2042 | RecipePath | Process program (recipe) storage directory | A |  |  | TBD |
| 2043 | GEMEnable | Enable GEM features | Bo | 0 | 1 | 1 |
| 2044 | RemoteCmdEnable | Enable remote command handling | Bo | 0 | 1 | 1 |
| 2045 | HostPPEnable | Enable process program manipulation | Bo | 0 | 1 | 1 |
| 2046 | ECSetEnable | Enable EC setting | Bo | 0 | 1 | 1 |
| 2047 | HostTermMsgEnable | enable terminal services setting | Bo | 0 | 1 | 1 |
| 2048 | RecipeExtension | Process program(recipe) file extension | A |  |  | \* |
| 2050 | Aser | The alarm state change count since startup. | U4 |  |  | 0 |
| 2051 | Time | Equipment computer date and time | A |  |  |  |
| 2054 | AlarmState | State of the alarm that last changed state since startup | U1 |  |  |  |
| 2055 | CEDescription | description of the last collection event triggered | U4 |  |  |  |
| 2056 | PPFormat | Indicates the type or types of process programs and recipes that are supported | U1 | 1 | 16 | 1 |
| 2057 | ResyncNVS | 1 – resynchronize EVENTSENABLED and ALARMSENABLED 0 – do not resynchronize | U1 |  |  | 1 |
| 4030 | PreviousControlState | The previous Control State | U1 |  |  |  |
| 4050 | ALIDInputFormat | allowed data type for alarm ids (ALID) in SECS-II messages from host | U4 |  |  |  |
| 4051 | CEIDInputFormat | allowed data type for collection event ids (CEID) in SECS-II messages from host | U4 |  |  |  |
| 4052 | DATAIDInputFormat | allowed data type for data ids (DATAID) in SECS-II messages from host | U4 |  |  |  |
| 4053 | RPTIDInputFormat | allowed data type for report ids (RPTID) in SECS-II messages from host | U4 |  |  |  |
| 4054 | TRIDInputFormat | allowed data type for trace ids (TRID) in SECS-II messages from host | U4 |  |  |  |
| 4055 | VIDInputFormat | allowed data type for variable (EC SV DV) vids (VID SVID DVID SVID ECID) in SECS-II messages from host | U4 |  |  |  |
| 4916 | TimeMM | time format MM/DD/YY hh:mm:ss. | A |  |  |  |
| 10001 | lot\_ID | Logistics: Lot user input lot ID |  |  |  |  |
| 10006 | equipment\_ID | Logistics: Lot equipment equipment ID |  |  |  |  |
| 10007 | software\_version | Logistics: Lot equipment software version |  |  |  |  |
| 10008 | operator\_name | Logistics: Lot equipment operator name ??? |  |  |  |  |
| 10010 | tape\_data | Logistics: Material user input tape data (from Camstar label) |  |  |  |  |
| 10011 | epoxy\_data | Logistics: Material user input epoxy data (from Camstar label) |  |  |  |  |
| 10012 | sealing\_data | Logistics: Material user input sealing data (from Camstar label) |  |  |  |  |
| 10013 | LGA\_batch\_data | Logistics: Material user input LGA batch data (from Camstar label) |  |  |  |  |
| 10014 | silicon\_paper\_data | Logistics: Material user input silicon paper data (from Camstar label) |  |  |  |  |
| 10016 | curing\_thermode\_ID | Logistics: Tooling user input curing thermode ID |  |  |  |  |
| 10017 | jetter\_ID | Logistics: Tooling user input jetter ID (each Jetter) |  |  |  |  |
| 10018 | test\_equipment\_ID | Logistics: Tooling user input test equipment ID |  |  |  |  |
| 10019 | downset\_tool\_ID | Logistics: Tooling user input downset tool ID |  |  |  |  |
| 10020 | punch\_tool\_ID | Logistics: Tooling user input punch tool ID |  |  |  |  |
| 10021 | pick\_tool\_type | Logistics: Tooling user input pick tool type |  |  |  |  |
| 10183 | curing\_force\_profile\_one\_curing\_cycle | Pin Curing station sensor curing force profile one curing cycle |  |  |  |  |
| 10347 | calibration\_for\_track\_1 | Module height measurement calibration for track 1 |  |  |  |  |
| 10348 | calibration\_for\_track\_2 | Module height measurement calibration for track 2 |  |  |  |  |
| 10083 | Input\_detecting\_level\_spec\_min | Input bad hole detection unit detecting level spec min |  |  |  |  |
| 10084 | Input\_detecting\_level\_spec\_max | Input bad hole detection unit detecting level spec max |  |  |  |  |
| 10155 | Dispense\_AOI\_detecting\_level\_spec\_min\_each\_programmed\_area | Dispense AOI detecting level spec min each programmed area |  |  |  |  |
| 10156 | Dispense\_AOI\_detecting\_level\_spec\_max\_each\_programmed\_area | Dispense AOI detecting level spec max each programmed area |  |  |  |  |
| 10172 | Post\_bond\_detecting\_level\_spec\_min\_each\_programmed\_area | Post-Bond Inspection detecting level spec min each programmed area |  |  |  |  |
| 10173 | Post\_bond\_detecting\_level\_spec\_max\_each\_programmed\_area | Post-Bond Inspection detecting level spec max each programmed area |  |  |  |  |
| 10299 | Sealing\_AOI\_detecting\_level\_spec\_min\_each\_programmed\_area | Sealing AOI detecting level spec min each programmed area |  |  |  |  |
| 10300 | SEALING\_AOI\_detecting\_level\_spec\_max\_each\_programmed\_area | Sealing AOI detecting level spec max each programmed area |  |  |  |  |
| 10329 | VI\_assembly\_detecting\_level\_spec\_min\_each\_programmed\_area | VI module (assembly side) detecting level spec min each programmed area |  |  |  |  |
| 10330 | VI\_assemblydetecting\_level\_spec\_max\_each\_programmed\_area | VI module (assembly side) detecting level spec max each programmed area |  |  |  |  |
| 10337 | VI\_module\_detecting\_level\_spec\_min\_each\_programmed\_area | VI module (ISO side) detecting level spec min each programmed area |  |  |  |  |
| 10338 | VI\_module\_detecting\_level\_spec\_max\_each\_programmed\_area | VI module (ISO side) detecting level spec max each programmed area |  |  |  |  |
| 11128 | Jetter\_dispense\_01\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 01 sensor Z calibration sensor |  |  |  |  |
| 11134 | Jetter\_dispense\_01\_detecting\_level\_spec\_min | Jetter dispense unit 01 detecting level spec. min |  |  |  |  |
| 11135 | Jetter\_dispense\_01\_detecting\_level\_spec\_max | Jetter dispense unit 01 detecting level spec. max |  |  |  |  |
| 11228 | Jetter\_dispense\_02\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 02 sensor Z calibration sensor |  |  |  |  |
| 11234 | Jetter\_dispense\_02\_detecting\_level\_spec\_min | Jetter dispense unit 02 detecting level spec. min |  |  |  |  |
| 11235 | Jetter\_dispense\_02\_detecting\_level\_spec\_max | Jetter dispense unit 02 detecting level spec. max |  |  |  |  |
| 11328 | Jetter\_dispense\_03\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 03 sensor Z calibration sensor |  |  |  |  |
| 11334 | Jetter\_dispense\_03\_detecting\_level\_spec\_min | Jetter dispense unit 03 detecting level spec. min |  |  |  |  |
| 11335 | Jetter\_dispense\_03\_detecting\_level\_spec\_max | Jetter dispense unit 03 detecting level spec. max |  |  |  |  |
| 11428 | Jetter\_dispense\_04\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 04 sensor Z calibration sensor |  |  |  |  |
| 11434 | Jetter\_dispense\_04\_detecting\_level\_spec\_min | Jetter dispense unit 04 detecting level spec. min |  |  |  |  |
| 11435 | Jetter\_dispense\_04\_detecting\_level\_spec\_max | Jetter dispense unit 04 detecting level spec. max |  |  |  |  |
| 11528 | Jetter\_dispense\_05\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 05 sensor Z calibration sensor |  |  |  |  |
| 11534 | Jetter\_dispense\_05\_detecting\_level\_spec\_min | Jetter dispense unit 05 detecting level spec. min |  |  |  |  |
| 11535 | Jetter\_dispense\_05\_detecting\_level\_spec\_max | Jetter dispense unit 05 detecting level spec. max |  |  |  |  |
| 11628 | Jetter\_dispense\_06\_Z\_calibration\_sensor\_dispense | Jetter dispense unit 06 sensor Z calibration sensor |  |  |  |  |
| 11634 | Jetter\_dispense\_06\_detecting\_level\_spec\_min | Jetter dispense unit 06 detecting level spec. min |  |  |  |  |
| 11635 | Jetter\_dispense\_06\_detecting\_level\_spec\_max | Jetter dispense unit 06 detecting level spec. max |  |  |  |  |
| 10272 | Jetter\_sealing\_01\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 01 sensor Z calibration sensor |  |  |  |  |
| 10278 | Jetter\_sealing\_01\_detecting\_level\_spec\_min | Jetter sealing unit 01 detecting level spec. min |  |  |  |  |
| 10279 | Jetter\_sealing\_01\_detecting\_level\_spec\_max | Jetter sealing unit 01 detecting level spec. max |  |  |  |  |
| 10372 | Jetter\_sealing\_02\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 02 sensor Z calibration sensor |  |  |  |  |
| 10378 | Jetter\_sealing\_02\_detecting\_level\_spec\_min | Jetter sealing unit 02 detecting level spec. min |  |  |  |  |
| 10379 | Jetter\_sealing\_02\_detecting\_level\_spec\_max | Jetter sealing unit 02 detecting level spec. max |  |  |  |  |
| 10472 | Jetter\_sealing\_03\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 03 sensor Z calibration sensor |  |  |  |  |
| 10478 | Jetter\_sealing\_03\_detecting\_level\_spec\_min | Jetter sealing unit 03 detecting level spec. min |  |  |  |  |
| 10479 | Jetter\_sealing\_03\_detecting\_level\_spec\_max | Jetter sealing unit 03 detecting level spec. max |  |  |  |  |
| 10572 | Jetter\_sealing\_04\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 04 sensor Z calibration sensor |  |  |  |  |
| 10578 | Jetter\_sealing\_04\_detecting\_level\_spec\_min | Jetter sealing unit 04 detecting level spec. min |  |  |  |  |
| 10579 | Jetter\_sealing\_04\_detecting\_level\_spec\_max | Jetter sealing unit 04 detecting level spec. max |  |  |  |  |
| 10672 | Jetter\_sealing\_05\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 05 sensor Z calibration sensor |  |  |  |  |
| 10678 | Jetter\_sealing\_05\_detecting\_level\_spec\_min | Jetter sealing unit 05 detecting level spec. min |  |  |  |  |
| 10679 | Jetter\_sealing\_05\_detecting\_level\_spec\_max | Jetter sealing unit 05 detecting level spec. max |  |  |  |  |
| 10772 | Jetter\_sealing\_06\_Z\_calibration\_sensor\_sealing | Jetter sealing unit 06 sensor Z calibration sensor |  |  |  |  |
| 10778 | Jetter\_sealing\_06\_detecting\_level\_spec\_min | Jetter sealing unit 06 detecting level spec. min |  |  |  |  |
| 10779 | Jetter\_sealing\_06\_detecting\_level\_spec\_max | Jetter sealing unit 06 detecting level spec. max |  |  |  |  |

## All Alarms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Alarm Name** | **AlarmID** | **Alarm Set Event** | **Alarm Clear Event** | **Description** |
| Error10000 | 10000 | 1001 | 1002 | Module kann nicht verbunden werden, starte Simulation. |
| Error10001 | 10001 | 1003 | 1004 | Das Modell der Vision wurde nicht eingelernt. Die Vision-Suche kann nicht durchgeführt werden. |
| Error10002 | 10002 | 1005 | 1006 | Die Bildaufnahme der Vision ist fehlgeschlagen. |
| Error10003 | 10003 | 1007 | 1008 | Das Modell der Vision wurde nicht eingelernt. Die Vision-Suche kann nicht durchgeführt werden. |
| Error10004 | 10004 | 1009 | 1010 | Die Visiondaten können nicht geladen werden. |
| Error10005 | 10005 | 1011 | 1012 | Die Visiondaten können nicht gespeichert werden. |
| Error10006 | 10006 | 1013 | 1014 | Das Modell der Vision wurde nicht eingelernt. Die Vision-Suche kann nicht durchgeführt werden. |
| Error10007 | 10007 | 1015 | 1016 | Es wurde kein Arbeitsmodell für die Vision definiert. |
| Error10008 | 10008 | 1017 | 1018 | Es konnte kein Variationsmodell auf der Vision erzeugt werden |
| Error10009 | 10009 | 1019 | 1020 | Der Variation Work Mode auf der Vision ist unbekannt |
| Error10010 | 10010 | 1021 | 1022 | Die Simulation der Vision kann nicht gestartet werden, weil der Simulationstyp nicht definiert ist. |
| Error10011 | 10011 | 1023 | 1024 | Visiondaten können nur teilweise geladen werden. Die Daten für Modell sind defekt. |
| Error10012 | 10012 | 1025 | 1026 | Visiondaten können nur teilweise gespeichert werden. Die Daten für Modell sind defekt. |
| Error10013 | 10013 | 1027 | 1028 | Das Einlernen vom Modell ist fehlgeschlagen. |
| Error10014 | 10014 | 1029 | 1030 | Das Einlernen vom Modell ist fehlgeschlagen. |
| Error10015 | 10015 | 1031 | 1032 | Das Einlernen vom Modell ist fehlgeschlagen. |
| Error10017 | 10017 | 1033 | 1034 | Einlernen der Blob Erkennung ist fehlgeschlagen. |
| Error10018 | 10018 | 1035 | 1036 | Suchen nach Blob Erkennung fehlgeschlagen. |
| Error10019 | 10019 | 1037 | 1038 | Produktname für die Vision nicht gefunden. |
| Error10020 | 10020 | 1039 | 1040 | DataMatrixModell kann nicht eingelernt werden. |
| Error10021 | 10021 | 1041 | 1042 | Kamerabild kann nicht gespeichert werden. |
| Error10022 | 10022 | 1043 | 1044 | Das Verschieben des Mittelpunkts des Models ist fehlgeschlagen. |
| Error10030 | 10030 | 1045 | 1046 | Region für GrauwertInspektion kann nicht eingelernt werden. |
| Error10031 | 10031 | 1047 | 1048 | GrauwertInspektion fehlgeschlagen. |
| Error10040 | 10040 | 1049 | 1050 | QRCodeModell kann nicht eingelernt werden. |
| Error10050 | 10050 | 1051 | 1052 | Die Kalibrierung der Kamera ist fehlgeschlagen. |
| Error10060 | 10060 | 1053 | 1054 | BarcodeModell kann nicht eingelernt werden. |
| Error10070 | 10070 | 1055 | 1056 | SchweißpunktModell kann nicht eingelernt werden. |
| Error10071 | 10071 | 1057 | 1058 | SchweißpunktInspektion fehlgeschlagen. |
| Error10080 | 10080 | 1059 | 1060 | SchweißringModell kann nicht eingelernt werden. |
| Error10081 | 10081 | 1061 | 1062 | SchweißringInspektion fehlgeschlagen. |
| Error10082 | 10082 | 1063 | 1064 | Manuelle Kalibrierung |
| Error10090 | 10090 | 1065 | 1066 | HistogramInspektion fehlgeschlagen. |
| Error10100 | 10100 | 1067 | 1068 | Die Fiducialkonfigurationsdatei ist fehlerhaft. Die Kamerainspektion ist fehlgeschlagen. |
| Error10101 | 10101 | 1069 | 1070 | Anlegen von LED-Typ ist fehlgeschlagen. Der LED-Typ existiert bereits. |
| Error10102 | 10102 | 1071 | 1072 | Anlegen von LED-Typ ist fehlgeschlagen. Der Name enthält Sonderzeichen. |
| Error10103 | 10103 | 1073 | 1074 | Anlegen von LED-Typ ist fehlgeschlagen. Die Datei kann nicht geöffnet werden. |
| Error10200 | 10200 | 1075 | 1076 | Halcon Lizenz Fehler. |
| Error10061 | 10061 | 1077 | 1078 | Keine Messdaten für die Kalibrierung vorhanden. |
| Error10062 | 10062 | 1079 | 1080 | Ergebnisse der Kalibrierung konnten nicht gespeichert werden. |
| Error10063 | 10063 | 1081 | 1082 | Die ausgewählte Datei konnte nicht geladen werden. |
| Error10064 | 10064 | 1083 | 1084 | Die Messung konnte nicht erfolgreich durchgeführt werden. |
| Error10065 | 10065 | 1085 | 1086 | Es läuft bereits eine Kalibrierung einer anderen Kamera. |
| Error13000 | 13000 | 1087 | 1088 | Die Kommunikation mit dem Licht ist fehlgeschlagen. |
| Error13001 | 13001 | 1089 | 1090 | Die Beleuchtungseinstellungen können nicht geladen werden. |
| Error17000 | 17000 | 1091 | 1092 | Die serielle Schnittstelle zum Elotech-R2500-Heizung kann nicht geöffnet werden. |
| Error17001 | 17001 | 1093 | 1094 | Elotech R2500 Heizungs antwortet nicht. |
| Error17002 | 17002 | 1095 | 1096 | Der serielle Schnittstelle existiert nicht auf dem Computer. |
| Error17003 | 17003 | 1097 | 1098 | Die Elotech-R2500-Heizung antwortet nicht. |
| Error20000 | 20000 | 1099 | 1100 | Die Prozessdatei kann nicht geladen werden. |
| Error20001 | 20001 | 1101 | 1102 | Die Prozessdatei kann nicht gespeichert werden. |
| Error20002 | 20002 | 1103 | 1104 | Illegaler Produktname. |
| Error20003 | 20003 | 1105 | 1106 | Das Product ist für die Produktion ausgewählt und kann somit nicht gelöscht werden. |
| Error20030 | 20030 | 1107 | 1108 | Benutzer ist bereits vorhanden. |
| Error20031 | 20031 | 1109 | 1110 | Benutzername darf nicht leer sein. |
| Error20032 | 20032 | 1111 | 1112 | Passwortfeld darf nicht leer sein. |
| Error20033 | 20033 | 1113 | 1114 | Angegebene Berechtigung ungültig (nicht vorhanden). |
| Error20034 | 20034 | 1115 | 1116 | Der Benutzer kann nicht gefunden werden. |
| Error20035 | 20035 | 1117 | 1118 | Das eingegebene Passwort stimmt nicht mit dem Benutzer überein! |
| Error20036 | 20036 | 1119 | 1120 | Sie sind nicht dazu berechtigt diese Aufgabe auszuführen. |
| Error20037 | 20037 | 1121 | 1122 | Wollen sie den Benutzer wirklich löschen? |
| Error20038 | 20038 | 1123 | 1124 | Der derzeit eingeloggte Benutzer darf nicht gelöscht werden. |
| Error20039 | 20039 | 1125 | 1126 | Der Benutzer kann nicht gelöscht werden. |
| Error20040 | 20040 | 1127 | 1128 | Kann den Standard Benutzer nicht löschen. Kein anderer Standard Benutzer vorhanden. |
| Error20041 | 20041 | 1129 | 1130 | Der Standard Benutzer kann nicht gelöscht werden. |
| Error20050 | 20050 | 1131 | 1132 | Not-Halt aktiv. |
| Error20051 | 20051 | 1133 | 1134 | Druckluft zu niedrig. |
| Error20052 | 20052 | 1135 | 1136 | Vakuum zu niedrig. |
| Error20053 | 20053 | 1137 | 1138 | Türen geöffnet. |
| Error30000 | 30000 | 1139 | 1140 | Die Konfigurationsdateien sind fehlerhaft: Die Achsenkodierung ist unzülässig. |
| Error30001 | 30001 | 1141 | 1142 | Die Konfigurationsdateien sind fehlerhaft: Die Achsenreferenzierungsmethodenkennung ist unzulässig |
| Error30002 | 30002 | 1143 | 1144 | Die Referenzierungs ist fehlgeschlagen. |
| Error30003 | 30003 | 1145 | 1146 | Bei der Fahrt in den Endschalter wurde der Motor abgeschaltet. |
| Error30004 | 30004 | 1147 | 1148 | Sicherungsfahrt fehlgeschlagen. |
| Error30005 | 30005 | 1149 | 1150 | Sicherungsfahrt fehlgeschlagen. |
| Error30006 | 30006 | 1151 | 1152 | Motor kann nicht verfahren werden, da der Sicherheitseingang nicht aktiv ist. |
| Error30007 | 30007 | 1153 | 1154 | Die Konfiguration ist fehlgeschlagen. |
| Error30008 | 30008 | 1155 | 1156 | Motor wurde während der Fahrt abgeschaltet. |
| Error30009 | 30009 | 1157 | 1158 | Verfahren fehlgeschlagen. |
| Error30010 | 30010 | 1159 | 1160 | Die Konfiguration ist fehlgeschlagen. |
| Error30011 | 30011 | 1161 | 1162 | Die Referenzierung wurde abgebrochen, da der Motor nicht bestromt ist. (Konfigurationsdateien fehlerhaft). |
| Error30012 | 30012 | 1163 | 1164 | Endschalter erreicht |
| Error30013 | 30013 | 1165 | 1166 | Motor nicht bereit! Bitte starten Sie den jeweiligen Motor. |
| Error80000 | 80000 | 1167 | 1168 | Module kann nicht initialisiert werden. |
| Error1008000 | 1008000 | 1169 | 1170 | Es kann keine Socket-Verbindung hergestellt werden. |
| Error1008001 | 1008001 | 1171 | 1172 | Das empfangene Datenpaket hat eine ungültige Syntax. |
| Error1008002 | 1008002 | 1173 | 1174 | Module antwortet nicht. |
| Error1008003 | 1008003 | 1175 | 1176 | Das Gerät reagiert mit einer unbekannten Befehlssyntax. |
| Error1008004 | 1008004 | 1177 | 1178 | Die Initialisierung ist fehlgeschlagen. |
| Error1008005 | 1008005 | 1179 | 1180 | Die Simulation kann nicht gestartet werden. |
| Error93000 | 93000 | 1181 | 1182 | Die Verbindung zum IFX Tester kann nicht aufgebaut werden. |
| Error93001 | 93001 | 1183 | 1184 | Das empfangene Datenpacket hat eine illegale Syntax. |
| Error93002 | 93002 | 1185 | 1186 | IFX Tester antwortet nicht. |
| Error93003 | 93003 | 1187 | 1188 | IFX Tester Notaus aktiv. |
| Error93004 | 93004 | 1189 | 1190 | Das Simulationsprogramm für IFX Tester kann nicht gestartet werden. |
| Error93005 | 93005 | 1191 | 1192 | Die Gegenplatte konnte nicht nach unten bewegt werden. |
| Error93006 | 93006 | 1193 | 1194 | Die Gegenplatte konnte nicht nach oben bewegt werden. |
| Error93007 | 93007 | 1195 | 1196 | Der Testkopf konnte nicht nach oben bewegt werden. |
| Error93008 | 93008 | 1197 | 1198 | Der Testkopf konnte nicht nach unten bewegt werden. |
| Error93009 | 93009 | 1199 | 1200 | Touchdown-Timeout nach erreicht. |
| Error93010 | 93010 | 1201 | 1202 | IFX-Tester error. |
| Error89000 | 89000 | 1203 | 1204 | Ein Modul, das hätte getestet werden müssen, wurde nicht getestet. |
| Error89001 | 89001 | 1205 | 1206 | Das empfangene Message-Parameter sind ungültig. |
| Error94000 | 94000 | 1207 | 1208 | Die Verbindung zu MES (SECS/GEM Middleware) kann nicht aufgebaut werden. |
| Error94001 | 94001 | 1209 | 1210 | Das von der MW empfangene Datenpaket hat eine illegale Syntax. |
| Error94002 | 94002 | 1211 | 1212 | Die MES (SECS/GEM Middleware) antwortet nicht. |
| Error94003 | 94003 | 1213 | 1214 | Die Simulation für MES (SECS/GEM Middleware) kann nicht gestartet werden. |
| Error95000 | 95000 | 1215 | 1216 | Die Verbindung zur Wickon Kamera kann nicht aufgebaut werden. |
| Error95001 | 95001 | 1217 | 1218 | Das empfangene Datenpaket hat eine illegale Syntax. |
| Error95002 | 95002 | 1219 | 1220 | Die Simulation kann nicht gestartet werden. |
| Error95003 | 95003 | 1221 | 1222 | Das Gerät antwortet mit einem unbekannten Kommandosyntax. |
| Error95100 | 95100 | 1223 | 1224 | Die maximale Anzahl an erlaubten Schlechtteilen ist überschritten. |
| Error95101 | 95101 | 1225 | 1226 | Ein Item welches als gut Markiert war, ist mit einem Schlechtloch markiert. |
| Error96000 | 96000 | 1227 | 1228 | Fiducial nicht erkannt. |
| Error96001 | 96001 | 1229 | 1230 | Kann nicht geöffnet werden (Handklemmung beachten). |
| Error96002 | 96002 | 1231 | 1232 | Kann nicht geschlossen werden. |
| Error96050 | 96050 | 1233 | 1234 | Exakte Positionierung ist fehlgeschlagen. |
| Error96051 | 96051 | 1235 | 1236 | Zu weit transportiert. Keine Korrektur möglich. |
| Error98000 | 98000 | 1237 | 1238 | Zylinder der Schlechtlochstanze konnte nicht nach unten verfahren werden. |
| Error98100 | 98100 | 1239 | 1240 | Zylinder der Schlechtlochstanze konnte nicht nach oben verfahren werden. |
| Error99000 | 99000 | 1241 | 1242 | Motoric Downset ist nicht in Position. |
| Error99001 | 99001 | 1243 | 1244 | Reinigung der Downset nötig. |
| Error100000 | 100000 | 1245 | 1246 | Plasmagenerator konnte nicht eingeschaltet werden. |
| Error100001 | 100001 | 1247 | 1248 | Plasma konnte nicht eingeschaltet werden. |
| Error100002 | 100002 | 1249 | 1250 | Plamagenerator konnte nicht eingeschaltet werden. |
| Error100003 | 100003 | 1251 | 1252 | Plasma konnte nicht ausgeschaltet werden. |
| Error100004 | 100004 | 1253 | 1254 | Gegenpresse der Plasmastation konnte nicht nach oben gefahren werden. |
| Error100005 | 100005 | 1255 | 1256 | Gegenpresse der Plasmastation konnte nicht fixiert werden. |
| Error100006 | 100006 | 1257 | 1258 | Klemmen der Plasmastation konnten nicht geöffnet werden. |
| Error101000 | 101000 | 1259 | 1260 | Fiducial nicht erkannt. |
| Error101001 | 101001 | 1261 | 1262 | Kann nicht geöffnet werden (Handklemmung beachten). |
| Error101002 | 101002 | 1263 | 1264 | Kann nicht geschlossen werden. |
| Error101050 | 101050 | 1265 | 1266 | Exakte Positionierung ist fehlgeschlagen. |
| Error101051 | 101051 | 1267 | 1268 | Zu weit transportiert. Keine Korrektur möglich. |
| Error101052 | 101052 | 1269 | 1270 | Die Kopplung der Achse ist fehlgeschlagen. |
| Error101053 | 101053 | 1271 | 1272 | Die Freigabe der Achse ist fehlgeschlagen. |
| Error103500 | 103500 | 1273 | 1274 | Die Verbindung kann nicht aufgebaut werden. |
| Error103501 | 103501 | 1275 | 1276 | Das empfangene Datenpaket hat eine illegale Syntax. |
| Error103502 | 103502 | 1277 | 1278 | ASM antwortet nicht. |
| Error103503 | 103503 | 1279 | 1280 | ASM antwortet mit einem unbekannten Kommandosyntax. |
| Error103504 | 103504 | 1281 | 1282 | Die Initialisierung vonASM konnte nicht durchgeführt werden. |
| Error103505 | 103505 | 1283 | 1284 | Das von ASM empfangene Datenpaket %1s hat keine gültige Syntax. |
| Error103506 | 103506 | 1285 | 1286 | Die Scannerschnittstelle kann nicht geöffnet werden. |
| Error103507 | 103507 | 1287 | 1288 | Das Los kann nicht auf gerüstet werden. |
| Error103508 | 103508 | 1289 | 1290 | Das Indexervacuum kann nicht geschaltet werden. |
| Error103509 | 103509 | 1291 | 1292 | Feeder kann nicht mit Los gerüstet werden. |
| Error103510 | 103510 | 1293 | 1294 | Feeder hat keine LGAs für Los gerüstet. |
| Error103511 | 103511 | 1295 | 1296 | Kein Feeder mit Material verfügbar. |
| Error110000 | 110000 | 1297 | 1298 | Die installierte Lizenz ist ungültig. Bitte kontaktieren Sie den Hersteller. |
| Error110001 | 110001 | 1299 | 1300 | Die installierte Lizenz ist abgelaufen. |
| Error220000 | 220000 | 1301 | 1302 | Das Material steht falsch. Bitte manuell korrigieren. |
| Error310000 | 310000 | 1303 | 1304 | Barcode-Scanner kann sich nicht verbinden. |
| Error310001 | 310001 | 1305 | 1306 | Ungültigen Barcode gescannt. |
| Error340000 | 340000 | 1307 | 1308 | Die Verbindung zum Zerbra Drucker kann nicht aufgebaut werden. |
| Error340001 | 340001 | 1309 | 1310 | Die Verbindung zur Simulation des Zebra Druckers kann nicht aufgebaut werden. |
| Error340002 | 340002 | 1311 | 1312 | Die Simulation kann nicht gestartet werden. |
| Error340010 | 340010 | 1313 | 1314 | Fehler im Zebra Drucker festgestellt. Bitte Fehler beheben um weiterarbeiten zu können! Fehlerprüfung wiederholen und weiterarbeiten? |
| Error340011 | 340011 | 1315 | 1316 | Zebra Drucker pausiert. Bitte Drucker in Duckmodus versetzen um weiterzuarbeiten! |
| Error340012 | 340012 | 1317 | 1318 | Zebra Drucker Druckkopf geöffnet. Bitte Druckerkopf schließen um weiterzuarbeiten! |
| Error340013 | 340013 | 1319 | 1320 | Zebra Printer Grundlegender erzwungener Fehler. Bitte Drucker prüfen. |
| Error340014 | 340014 | 1321 | 1322 | Zebra Printer Fehler in Bitmap-Zuweisung. Bitte Drucker prüfen. |
| Error340015 | 340015 | 1323 | 1324 | Zebra Printer Puffer voll. Bitte Drucker prüfen. |
| Error340016 | 340016 | 1325 | 1326 | Zebra Printer Fehler im Cache-Speicher. Bitte Drucker prüfen. |
| Error340017 | 340017 | 1327 | 1328 | Zebra Printer Konfiguration verlorengegangen. Bitte Drucker prüfen. |
| Error340018 | 340018 | 1329 | 1330 | Zebra Printer Schneideeinheit klemmt. Bitte Drucker prüfen. |
| Error340019 | 340019 | 1331 | 1332 | Zebra Printer Übertemperatur am Druckkopf. Bitte Drucker prüfen. |
| Error340020 | 340020 | 1333 | 1334 | Zebra Printer Fehler bei der RAM-Zuweisung. Bitte Drucker prüfen. |
| Error340021 | 340021 | 1335 | 1336 | Zebra Printer Error in der Farbbandspannung. Bitte Drucker prüfen. |
| Error340022 | 340022 | 1337 | 1338 | Zebra Printer Fehler bei gespeicherter Bitmap. Bitte Drucker prüfen. |
| Error340023 | 340023 | 1339 | 1340 | Zebra Printer Fehler bei gespeicherter Schriftart. Bitte Drucker prüfen. |
| Error340024 | 340024 | 1341 | 1342 | Zebra Printer Fehler in gespeichertem Druckformat. Bitte Drucker prüfen. |
| Error340025 | 340025 | 1343 | 1344 | Zebra Printer Fehler bei gespeicherter Grafik. Bitte Drucker prüfen. |
| Error340026 | 340026 | 1345 | 1346 | Zebra Printer Prüffehler. Bitte Drucker prüfen. |
| Error340027 | 340027 | 1347 | 1348 | Zebra Printer Druck fehlgeschlagen. Bitte Drucker prüfen. |
| Error340099 | 340099 | 1349 | 1350 | Unbekannter Zebra Printer Fehler. Bitte Drucker prüfen. |
| Error1001002 | 1001002 | 1351 | 1352 | Tür geöffnet bei Setup - setup wird abgebrochen. |
| Error1002000 | 1002000 | 1353 | 1354 | Die Konfiguration des Schieberegisters ist fehlgeschlagen. Die geladenen Daten sind fehlerhaft. |
| Error1002001 | 1002001 | 1355 | 1356 | Das Schieberegister ist nicht initialisiert. |
| Error1002002 | 1002002 | 1357 | 1358 | Der Positionszugrif im Schieberegister ist unzulässig. |
| Error1002003 | 1002003 | 1359 | 1360 | Die Gerätschaftensektion in der Konfigurationsdatei des Schieberegiste ist fehlerhaft. |
| Error1002004 | 1002004 | 1361 | 1362 | Die vom Schieberegister empfangenen Message-Daten sind inkonsistent. |
| Error1002005 | 1002005 | 1363 | 1364 | Die Gerätschaft ist im Schieberegister unbekannt. |
| Error1002006 | 1002006 | 1365 | 1366 | Die Größe des Schieberegisters konnte nicht verändert werden. |
| Error1002500 | 1002500 | 1367 | 1368 | Es sind keine weiteren Nutzen für die Produktion vorgesehen. |
| Error1002501 | 1002501 | 1369 | 1370 | Der Los-Name enthält unzulässig Zeichen. Das Los kann daher nicht angelegt werden. |
| Error1002502 | 1002502 | 1371 | 1372 | Das Los enthält keine Nutzen. |
| Error1002503 | 1002503 | 1373 | 1374 | Das Los ist bereits angelegt. |
| Error1002600 | 1002600 | 1375 | 1376 | Die Losdateien können nicht in das Verzeichnis kopiert werden. |
| Error1002601 | 1002601 | 1377 | 1378 | Die temporären Losdateien können nicht aus dem Verzeichnis gelöscht werden. |
| Error1002602 | 1002602 | 1379 | 1380 | Das Verzeichnis kann nicht erstellt werden. |
| Error1002603 | 1002603 | 1381 | 1382 | Die temporären Losdateien können nicht aus dem Verzeichnis gelesen werden. |
| Error1003000 | 1003000 | 1383 | 1384 | Die Konfiguration des Puffer-Register ist fehlgeschlagen. Die geladenen Daten sind fehlerhaft. |
| Error1003001 | 1003001 | 1385 | 1386 | Die vom Register empfangenen Message-Daten sind inkonsistent. |
| Error1003002 | 1003002 | 1387 | 1388 | Die Größe des Registers konnte nicht verändert werden. |
| Error1003003 | 1003003 | 1389 | 1390 | Buffer ist leer, es kann kein Material mehr abgegeben werden. |
| Error1003004 | 1003004 | 1391 | 1392 | Buffer ist voll, es kann kein Material mehr aufgenommen werden. |
| Error1003005 | 1003005 | 1393 | 1394 | Ungültiges Element. |
| Error1003006 | 1003006 | 1395 | 1396 | Ungültiges Anzahl von Vorschüben. |
| Error1006001 | 1006001 | 1397 | 1398 | Trennpapier an der Siplace ist gerissen. |
| Error1006002 | 1006002 | 1399 | 1400 | Bandriss erkannt. |
| Error1006003 | 1006003 | 1401 | 1402 | Epoxy von Jetter 1 ist ungültig. |
| Error1006004 | 1006004 | 1403 | 1404 | Epoxy von Jetter 2 ist ungültig. |
| Error1006005 | 1006005 | 1405 | 1406 | Epoxy von Jetter 3 ist ungültig. |
| Error1006006 | 1006006 | 1407 | 1408 | Epoxy von Jetter 4 ist ungültig. |
| Error1006007 | 1006007 | 1409 | 1410 | Verfahren auf Transportposition bei Siplace Tisch fehlgeschlagen. |
| Error1006008 | 1006008 | 1411 | 1412 | Verfahren auf Wartungsposition bei Siplace Tisch fehlgeschlagen. |
| Error1006009 | 1006009 | 1413 | 1414 | Verfahren des Silikonbandtransports in der Siplace fehlgeschlagen. |
| Error20060 | 20060 | 1415 | 1416 | Not-Halt-Knopf Ofen hinten gedrückt. |
| Error20061 | 20061 | 1417 | 1418 | Not-Halt-Knopf AOI 3 und 4 gedrückt. |
| Error20062 | 20062 | 1419 | 1420 | Not-Halt-Knopf Jetter 1 und 2 gedrückt. |
| Error20063 | 20063 | 1421 | 1422 | Not-Halt-Knopf Curing gedrückt. |
| Error20064 | 20064 | 1423 | 1424 | Not-Halt-Knopf Jetter 3 und 4 gedrückt. |
| Error20065 | 20065 | 1425 | 1426 | Tür Jetter 1 und 2 geöffnet. |
| Error20066 | 20066 | 1427 | 1428 | Innere Tür bei Plasma geöffnet. |
| Error20067 | 20067 | 1429 | 1430 | Tür bei Curing geöffnet. |
| Error20068 | 20068 | 1431 | 1432 | Untere Tür bei Curing geöffnet. |
| Error20069 | 20069 | 1433 | 1434 | Tür bei Jetter 3 und 4 geöffnet. |
| Error20070 | 20070 | 1435 | 1436 | Tür bei Ofen geöffnet. |
| Error20071 | 20071 | 1437 | 1438 | Tür bei AOI 3 und 4 geöffnet. |
| Error20072 | 20072 | 1439 | 1440 | Tür Relais bei Jetter 1 und 2 nicht bereit. |
| Error20073 | 20073 | 1441 | 1442 | Tür Relais bei Curing nicht bereit. |
| Error20074 | 20074 | 1443 | 1444 | Tür Relais bei Jetter 3 und 4 nicht bereit. |
| Error20075 | 20075 | 1445 | 1446 | Tür Relais bei Ofen nicht bereit. |
| Error20076 | 20076 | 1447 | 1448 | Tür Relais bei AOI 3 und 4 nicht bereit. |
| Error550000 | 550000 | 1449 | 1450 | Der Analogausgang kann nicht gesetzt werden. |
| Error99500 | 99500 | 1451 | 1452 | Setzen der Digitalen Ausgänge für die Höhenmessung fehlgeschlagen |
| Error99501 | 99501 | 1453 | 1454 | Illegale Anzahl von StepLines in der Höhenmessung |
| Error99502 | 99502 | 1455 | 1456 | Platzhalter |
| Error99503 | 99503 | 1457 | 1458 | Ergebnis der Höhenmessung außerhalb des Toleranzbereiches |
| Error99504 | 99504 | 1459 | 1460 | Anzahl der Fehler in Folge in Linie überschritten. |
| Error99505 | 99505 | 1461 | 1462 | Setup der Höhenmessung fehlgeschlagen |
| Error99506 | 99506 | 1463 | 1464 | Die Höhenmessung befindet sich nicht in der Initialposition |
| Error99507 | 99507 | 1465 | 1466 | Die Höhenmesung befindet sich nicht in der Arbeitsposition |
| Error99508 | 99508 | 1467 | 1468 | Das Limit der Schneidhöhe wurde beim aktuellen Item überschritten. |
| Error99600 | 99600 | 1469 | 1470 | Schlechtloch gefunden, aber Item ist gut. |
| Error99601 | 99601 | 1471 | 1472 | Kein Mak-Loch gefunden, aber Item ist schlecht. |
| Error99602 | 99602 | 1473 | 1474 | Schlechtes Loch gefunden, aber in Abbruchtoleranz. |
| Error99603 | 99603 | 1475 | 1476 | Falsches Loch bei gestanzt. |
| Error99604 | 99604 | 1477 | 1478 | ModelId Liste und Inspektionsparameter Einstellungen sind inkonsistent |
| Error99605 | 99605 | 1479 | 1480 | Ein Item welches als gut Markiert war, ist mit einem Schlechtloch markiert. |
| Error1010000 | 1010000 | 1481 | 1482 | Wartun nötig. |
| Error1010001 | 1010001 | 1483 | 1484 | Das Module ist nicht nicht wie der Prozess eingestellt. |
| Error1001509 | 1001509 | 1485 | 1486 | Keine Seite des Rewinders am Turm bereit. |
| Error1001510 | 1001510 | 1487 | 1488 | Das Material muss wegen der Schneidhöhe bei der Höhenmessung rausgeschnitten werden. |