

1 Introduction

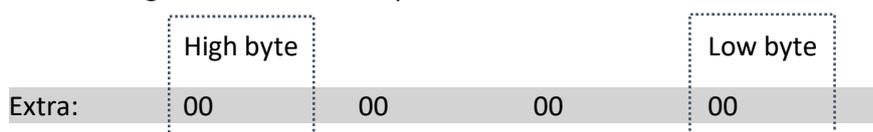
The Arcoma Precision system will display system messages on the OTC display, imaging system monitor and in log files during normal use and in error situations. This document contains information about those messages and suggested actions to be taken by service personnel to correct malfunctions that may occur.

2 Structure of System Messages

System messages are classified based on priority as INFORMATION, WARNING or ERROR. Messages consists of the following data:

Node:	The reporting node. The origin of the message. See <i>Table 1</i> .
Component:	The component within the reporting node. Detailed origin of the messages. See <i>Table 1</i> .
Reason:	Explanation in plain text. The reason for the message.
Extra:	Four bytes containing detailed information about the message. Content differs depending on Reason.

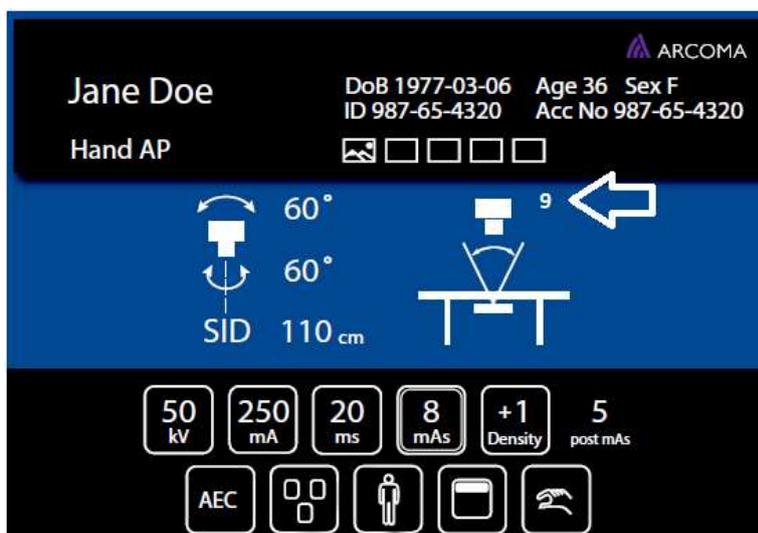
Extra - Designation of the four bytes:



Example of Extra:

Extra for an “Automatic movement error” message is 0x90C. The error message tells us that the value represents - Autoposition ID and - Mode. Messages always contain four bytes and can be seen as 90C as well as 00 00 09 0C. For this message the two high bytes are not used, 09 represents Autoposition number 9 and 0C represents Mode number 12, Stitching table (see *Table 4*).

The Windows Calculator can be used to convert values from hexadecimal to decimal.



Autoposition number 9.

Mode ID 0C or 12 if converted to decimal.

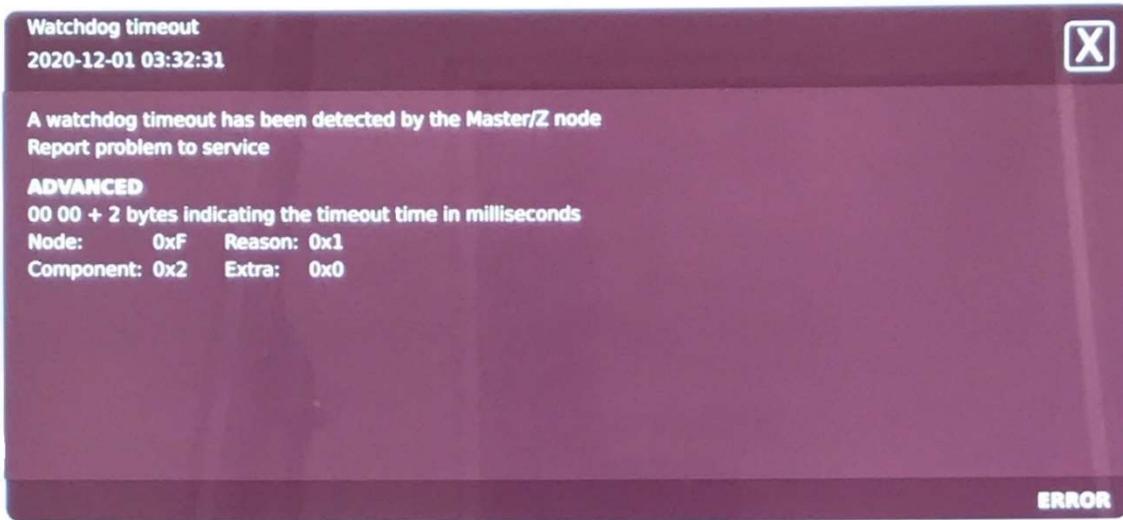


Error messages can be presented in different areas of the Precision System. On the OTC Display, in log files and in the ArcoCeil Service program. Messages from the generator and Imaging system can also be presented on the Imaging System monitor.

2.1 OTC Display

The messages are stored in the display and can be exported as a log file.

Messages are presented in hexadecimal format.



- Error message
- Date and time of error. Particularly helpful when trying to find a specific event in log files.
- Reason for error message in plain text.
- Advanced information about the error and how the information under Extra should be interpreted.
- Message priority (Information / Warning / Error).



Ask user or local engineer to send photo of error message and logs. That way, all information including date and time and other details are always available for the analysis.

2.2 Overwrap logs (CXDINE_OverwrapLog_yyyy_mm_dd_tttt)

The overwrap logs are found on the imaging system PC at C:\CXDI_NE_Overwrap\Log. The .txt files can be copied and shared with the technical support provider.

Messages are presented in decimal format.

- Code 1 = Node
- Code 2 = Component
- Code 3 = Reason
- Code 4 = Extra

```
"Log" Verbose 0 "[20200624 00:19:15.324] TableErrorInfoNotify: from table."
"Log" Error 0 "[20200624 00:19:15.324] Table log message: A watchdog timeout has been detected by the {Node:Name} node, [ Code1=15 Code2=2 Code3=1 Code4=0 ]"

A watchdog timeout has been detected by the {Node:Name} node, [ Code1=15 Code2=2 Code3=1 Code4=0 ]"
```

2.3 Arco Ceil Service program

The screenshot displays the ArcoCeil service program interface. On the left is a tree view of the system components. The main area contains a table of node information, and at the bottom is a log of system messages.

	System	Master	Node Z	Node X	Node Y	Node A	Node B
State		Error	Error	Disable	Disable	Disable	Disable
Software version	R0402	A0402	A0402	B0101	B0101	A0100	A0100
Hardware version		R0301	R0301	R0301	R0301	R0301	R0301
Driver version				R0502	R0502	R0000	R0000

	Bucky	Node WS	Node Tilt	SignalInt.	Guard	UI Buttons	Collimator	HandControl
State	Disable	Disable	Disable	-	Disable	Disable	Disable	Disable
Software version	A0106	A0108	A0103	A0201	R0010	B0200	B0200	A0102
Hardware version	R0301	R0301	R0301	R0301	NA	NA	NA	10101
Driver version	R0000	R0000	R0502					

System messages

```

09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:06:54 Error, Node Z, 02 01 00 00 00 00
09:06:54 Error, Node Z, 02 01 00 00 00 00
    
```

Access level 3 Connected

3 System messages

AEC BUT Error [14]

AEC backup timer – Exposure terminated

Generator Control

Reason: AEC exposure exceeded allowed back-up time.

NOTE! In Stitching mode, the system ability to cover selected AEC fields depend on the image size selected by the user. For this reason, it is advisable to use manual exposures for stitching examinations (no AEC).

Action: 1. Check exposure technique settings. Adjust backup time if necessary. 2. Check that correct AEC chamber is energized. 3. Check that X-ray tube is pointing at correct AEC device. 4. Check that the selected collimator field size allows selected AEC fields to be covered by radiation. 5. Check AEC cable for damage and proper connection.

Reference: UBD_0073_AEC_C, MD-0936 (AEC board assembly 737998), GenwareMP.

AEC Device Err [51]

AEC feedback error (no feedback signal detected)

Generator Control

Reason: Generator has detected no, or insufficient, feedback signal from the AEC device and consequently aborted exposure.

Action: 1. Check that X-ray tube is pointing at correct AEC device. 2. Check that the selected collimator field size allows selected AEC fields to be covered by radiation. 3. Check AEC cable for damage and proper connection. 3. Using an oscilloscope, check the AEC ramp signal on "Dedicated ION AEC Board" test point TP8 (the signal should rise from 0VDC towards +10VDC) and HV Feedback on the "Generator Control Board" test point TP8 (1V=20kV HV feedback). Confirm that the HV Feedback signal starts and stops at the same time as the AEC ramp signal.

Reference: UBD_0073_AEC_C, MD-0936 (AEC board assembly 737998), GenwareMP.

AEC out of Range [54]

AEC reference out of range

Generator Control

Reason: AEC reference has reached a maximum or minimum level.

Action: Re-adjust AEC calibration including density to operate within AEC range (0 to 10VDC). Measure voltage on TP9 of the AEC-board in the generator.

Reference: UBD_0073_AEC_C, MD-0936 (AEC board assembly 737998), GenwareMP.

AEC stop Error [57]

AEC stop signal in wrong state

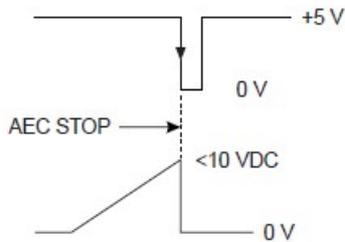
Generator Control

Reason: The message is displayed by the generator if the signal “PT Stop” is active (exposure ended) already during the PREP sequence. The exposure will be inhibited by the generator.

NOTE! This error message can sometimes be displayed together with a normal AEC-backup information message.

Action: Check protocol values for mAs- and ms-backup. Confirm if the error occurs on both table and Wall stand. If it only happens on one workspace investigate the AEC-chamber, cable between chamber and generator and try another channel on the AEC-board. If problem occurs on both workspaces, disconnect them one by one while testing the other. If the problem remains on both chambers, investigate the AEC-board and Generator Control Board.

PT Stop signal (TP10) on the AEC-board should be “high” and drop to 0V when the AEC-ramp signal reaches the same level as the AEC-Ref signal.



Check that the PT Ramp signal (TP8) does not exceed the PT Reference (TP9) during Prep state.

Reference: UBD_0073_AEC_C, MD-0936 (AEC board assembly 737998), GenwareMP.

An unexpected PREP off was received

An unexpected PREP off was received

Node: 0x20, Component: 0x6E, Reason: 0x19, Extra: 0x0

Reason: The message is displayed if the generator sends a PREP OFF (Update_Radiographic_Prep prepOn= 0) command to the Precision SystemMaster before sending XRAY OFF (Update_Radiographic_Exposure xrayOn= 0") during the exposure sequence.

Action: Check external exposure handle and exposure buttons on the generator mini console. Check electric signals between exposure buttons and generator. Bypass the ESI-board by connecting mini console directly to generator control board for trouble shooting purposes. NOTE! This error can occur if the Genware service program is used while the generator control software (overwrap) is running.

Reference: UBD-0073_SC_2_C, MD-0931.

Correct sequence as seen in the overwrap log:

Update_Radiographic_Prep prepOn= 1"

PrepState: send to table. Prep = 0x10"

Update_Radiographic_Exposure xrayOn= 1"

XrayState: send to table. Xray = 0x10"
Update_Radiographic_Exposure xrayOn= 0"
XrayState: send to table. Xray = 0x00"
Update_Radiographic_Prep prepOn= 0"

Automatic movement error

The requested position for a node is not valid. Not possible to move to.

Node: 0xF, Component: 0x10, Reason: 0x32, Extra: 0xA

Reason: A node cannot be positioned. The reporting node ID is stated under "Extra".

Action: Depends on reporting node.

Node 0xA, used in this example, is the bucky node. This error is displayed in Filmtracking mode if the tube angle or X/Y position exceeds the operable position of the Bucky node. Move the tube to a position within the software end stops of the Bucky node.

Use the Arco-Ceil service program to confirm that the software end stops for the Bucky node is properly calibrated. Recalibrate if necessary.

Check 36V supply from the table power supply to the bucky node (2.1CB02 / 2.1DC03). Confirm that the red ID plug is properly connected on the table Master node (2.1DC02 J1)

Automatic movement error

The mode for the requested autoposition is not valid

Autoposition ID and mode in Extra

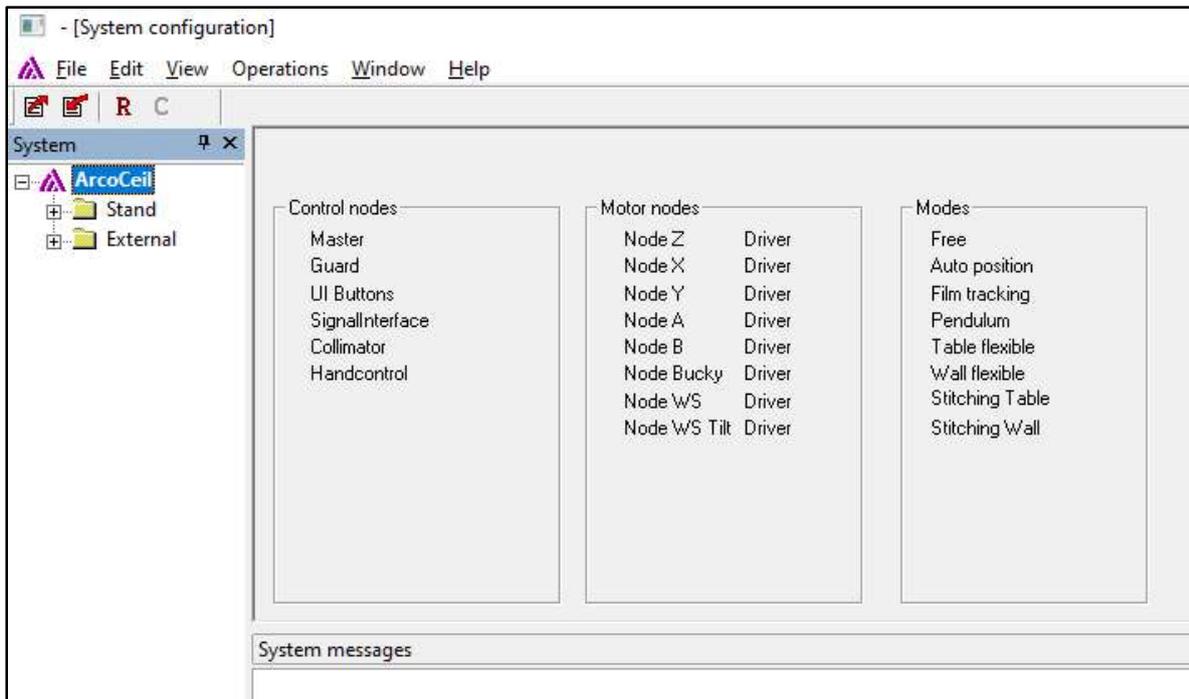
Node: 0xF, Component: 0x10, Reason: 0x33, Extra: 0x90C

Reason: Extra: 0x90C where 9 means *Autoposition number 9* and 0C means *Mode Stitching table*.

In the example above, Autoposition number 9 is set up for Stitching table mode. This mode is not included in the system.

Action: Recalibrate affected autoposition with an available mode. Upgrade the system with stitching functionality if required. If this error occurred after OTC Master/Z node replacement. Use hardware key (HWK) from original node in the new spare part.

Reference: Use ArcoCeil service program to check if the required mode is available.
ArcoCeil => Modes.



Automatic movement error

The requested position for a node is not valid. Not possible to move to.

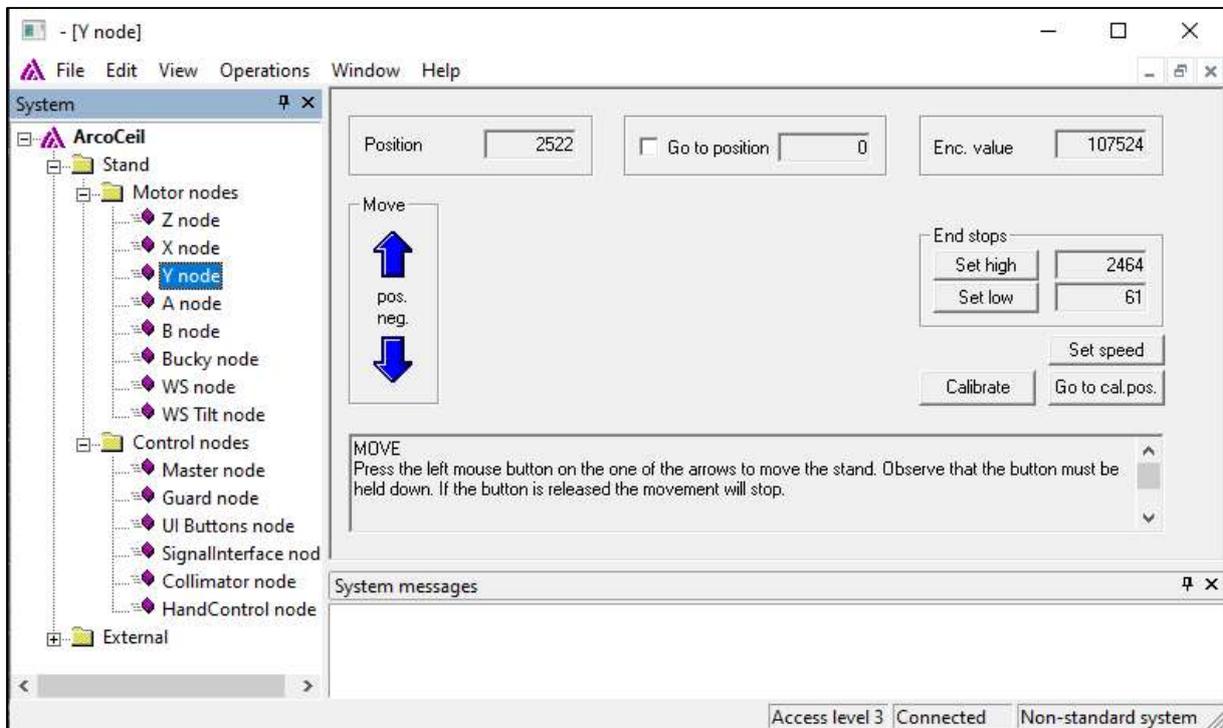
Autoposition ID in Extra

Node: 0xF, Component: 0x10, Reason: 0x32, Extra: 0x7

Reason: Extra: 0x7 where 7 means Node Y. See Table 1.

The selected position is not possible to move to.

Action: Confirm that the auto position address is set within end stops for all included motor nodes. Move the OTC to the required position manually. Use the ArcoCeil Service program to establish that the position is within the software end stops for the reporting node. See example below. The required position for the Y axis (2522) is outside the calibrated end stops (61-2464). This position is not possible to move to. Recalibrate end stops or autoposition.



NOTE! The collimator top- or bottom centering setting can affect positioning. Keep this in mind when analysing this error message.

Reference: ArcoCeil Service program. Parameter file.

Bucky 1 Interlock error [78]

Generator Control

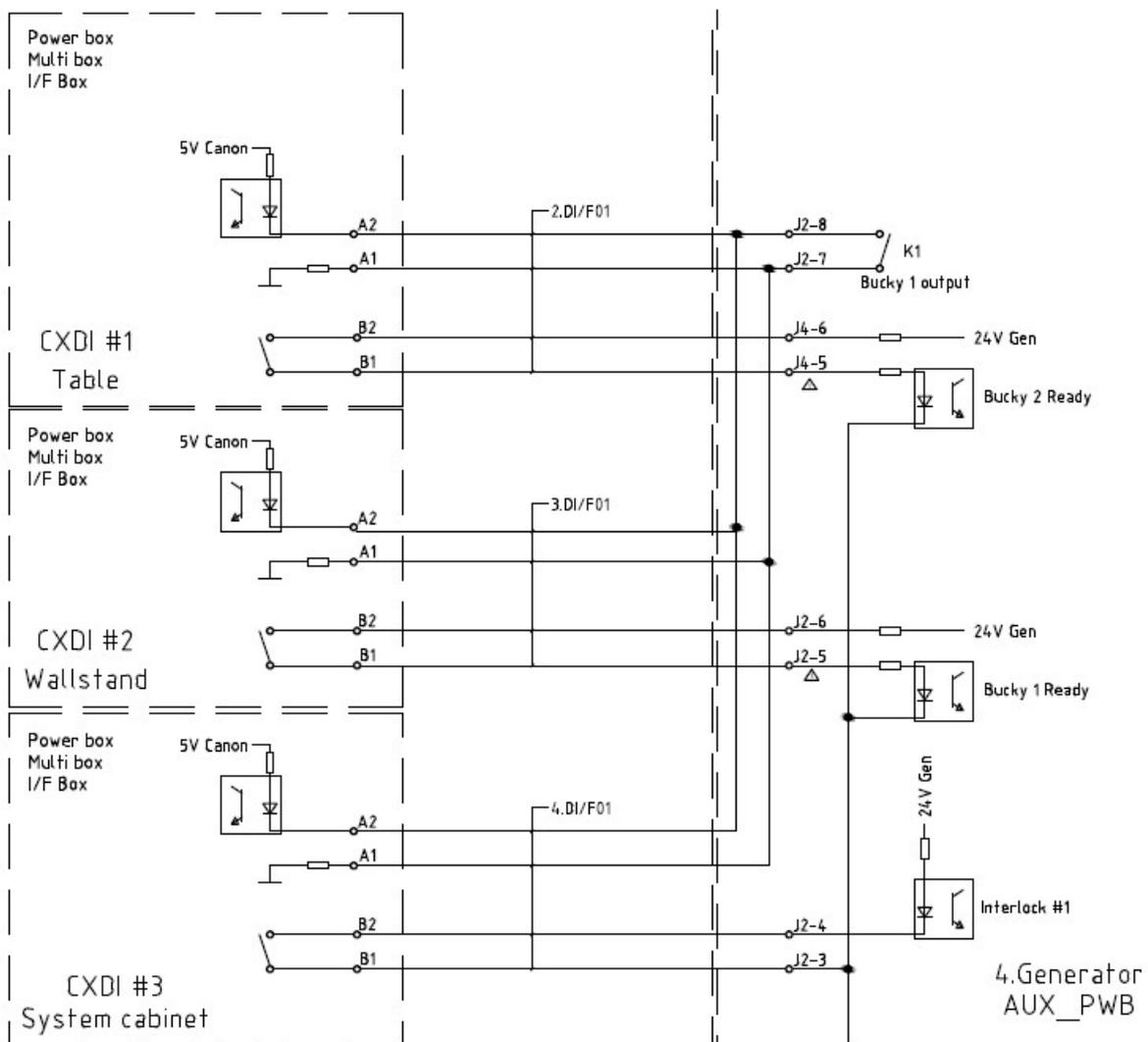
Reason: Response on an exposure request from the generator was not returned from the interface box in Wall stand.

Exposure was inhibited as the detector ready signal did not reach the generator Bucky Ready input Bucky 1 Ready J2-5 J2-6 (Generator AUX-board).

Action: Follow trouble shooting guide 0200-095-206 to investigate protocol settings, generator settings and electrical connections.

Reference: Trouble shooting guide 0200-095-206, available on the Arcoma Partner Portal.

Follow the appropriate System Block Diagram (SDB-C) to check the detector configuration of the specific system. Note that an SBD drawing is available for each individual detector configuration. See also UBD_C_Image system and MD-0930.



Bucky 2 Interlock error [79]

Generator Control

Reason: Response on an exposure request from the generator was not returned from the interface box in Table.

Exposure was inhibited as the detector ready signal did not reach the generator Bucky Ready input Bucky 2 Ready J4-5 J4-6 (Generator AUX-board).

Action: Follow trouble shooting guide 0200-095-206 to investigate protocol settings, generator settings and electrical connections.

Reference: Trouble shooting guide 0200-095-206, available on the Arcoma Partner Portal.

Follow the appropriate System Block Diagram (SDB-C) to check the detector configuration of the specific system. Note that an SBD drawing is available for each individual detector configuration. See also UBD_C_Image system and MD-0930.

Interlock 1 error [79]

Generator Control

Reason: Response on an exposure request from the generator was not returned from the interface box in System cabinet.

Exposure was inhibited as the detector ready signal did not reach the generator Bucky Ready input Interlock#1 J2-3, J2-4 (Generator AUX-board).

Action: Follow trouble shooting guide 0200-095-206 to investigate protocol settings, generator settings and electrical connections.

Reference: Trouble shooting guide 0200-095-206, available on the Arcoma Partner Portal.

Follow the appropriate System Block Diagram (SDB-C) to check the detector configuration of the specific system. Note that an SBD drawing is available for each individual detector configuration. See also UBD_C_Image system and MD-0930.

Button error

A mismatch occurred in the button verification

Node: 0xF, Component: 0x10, Reason: 0x6, Extra: 0x0

Reason: The software detected an unexpected state of a button. For example, a button being pressed when considered already pressed. This error could indicate that a node was temporarily disconnected from CAN-bus communication with the OTC Master node.

Action: Establish which button caused the problem.

Reference: Overwrap logs.

Button pressed at startup

The [Node name] node detected a pushed button when in start-up phase

Node: 0x5, Component: 0xB0, Reason: 0x1, Extra: 0x100

Reason: A button, in this example the OTC X/Y-button, was pressed during the start sequence of the system.

Action: Use error code and refer to *Table 2.* to determine which button caused the error.

Next step depends on the problem button. Repair or replace where appropriate.

NOTE! Errors from the bucky node can be temporarily prevented by deselecting table in the hardware key mask.

Reference: UBD-0073_TS_Det_move, UBD-0183-CS_4C_Display, UBD-0073_SC_Coll,

Button malfunction

Servo button (remote control) malfunction

Node: 0x7, Component: 0x30, Reason: 0x5, Extra: 0x0

Reason: The node detected that a button (servo) with double circuits was pressed but only one circuit was activated.

Action: Open the remote-control receiver box located on electrical plate Y. Confirm that LED 1 and 5 turns ON when the servo button is pressed, LED 2 and 3 turns ON when the Z-up button is pressed, and that LED 4 turns ON when the Collimator light button is pressed.

Reference: UBD_0073_CS_Remote

Calibration limit [211]

Selected parameter not calibrated

Generator Control

Reason: A parameter that was requested for the exam has not been calibrated. This limit message should not show if a tube calibration has been completed successfully.

Action: Recalibrate X-ray tube or select a calibrated parameter.

Reference: GenwareMP

Cannot communicate with Table system

Generator Control

Reason: This error message can show because of a generator restart or a generator communication failure. A repeated message indicates that the Ethernet communication between PC (overwrap software) and CB800 was interrupted or not established. This error is often followed by a Generator offline error and/or a DAP device error.[72].

Action: Confirm that the system is switched ON from the generator mini console. Check Ethernet cable connection ETH1 on PC and connector J1-ETH1 on the 4.CB800 module. Confirm that Firewall is turned off on PC or that firewall settings allow this communication.

Use the *Command Prompt* to ping the SystemMaster (CB800 module) on IP-address 192.168.0.1

Reference: SBD_C_Image_system



Can't reach position, wallstand detector is too high or in wrong orientation

Lower or tilt wallstand detector to vertical. Retry movement

Node: 0xF, Component: 0x10, Reason: 0x2A, Extra: 0x0

Reason: The system detected a risk for collision while moving to a wall stand autoposition.

Action: Lower or tilt wallstand detector to vertical. Retry movement. Check calibration if problem persists for no obvious reason.

Reference: Service and Installation manual, Installation chapter, Calibration of wall stand.

Checksum error

The {Node:Name} node has detected a parameter problem

Node: 0x3, Component: 0x2, Reason: 0x2, Extra: 0x0

Reason: Validation of node parameters failed. This error will occur before backup parameters are loaded to a new spare part node that has been installed in the system.

Action: Restore back up parameters to the node and restart system. If persistent error, replace the board.

Reference: ArcoCeil Service program.

Collision

The Y node has reported a collision

Node: 0x7, Component: 0x3, Reason: 0x3, Extra: 0x5

Reason: The Y-node (node #7) reported a collision. The type of collision is available in Extra. See collision types, *Table 3*.

Action: Remove obstacle and continue. If persistent with no obvious reason, use trouble shooting guide 0200-095-201 to troubleshoot this error. Confirm that the Y motor cable is properly connected to 1.YDC01 J3. Check mechanical adjustment of the X-axis motor unit.

Reference: Trouble shooting guide 0200-095-201, available on the Arcoma Partner Portal. WRD-0073_CS_2.

Collision

The Alpha node has reported a collision

Node: 0x2, Component: 0x3, Reason: 0x3, Extra: 0x3

Reason: The Alpha node (node #2) reported a collision. The type of collision is available in Extra. See collision types, *Table 3*.

Action: Remove obstacle and continue. If persistent with no obvious reason....

Confirm that the Alpha brake magnet is properly connected to 1.3RCC01 J6. Check mechanical adjustment of the X-axis motor unit.

Reference: WRD-0073_CS_2.

Collision

The Wall Stand node has reported a collision

Node: 0x9, Component: 0x3, Reason: 0x3, Extra: 0x3

Reason: The WS node (node #9) reported a collision of type 3. See collision types, *Table 3*.

Action: Remove obstacle and continue. If persistent error with no obvious reason. Check Wall stand fuse 3.1F01. Make sure the wall stand is properly balanced. Add or remove counterweights if needed.

Reference: UBD-0073_WS_2_Z-Drive.

Collision

The Wall Tilt node has reported a collision

Node: 0xB, Component: 0x3, Reason: 0x3, Extra: 0x1

Reason: The WS Tilt node (node #B) reported a collision of type 1. See collision types, *Table 3*.

Action: Remove obstacle and continue. If persistent error with no obvious reason. Check IR-sensors installed on the covers of the tilt unit.

Reference: UBD-0073_WS_2_Tilt-Drive, UBD-0073_WS_2_Tilt_Ind, UBD-0073_WS_2_Power.

Collision

The Wall Tilt node has reported a collision

Node: 0xB, Component: 0x3, Reason: 0x3, Extra: 0x3

Reason: The WS Tilt node (node #B) reported a collision of type 3. See collision types, *Table 3*.

Action: Remove obstacle and continue. If persistent error with no obvious reason. Check Wall stand fuse 3.1F01.

Reference: UBD-0073_WS_2_Tilt-Drive, UBD-0073_WS_2_Tilt_Ind, UBD-0073_WS_2_Power.

Communication error

The collimator is not responding on messages

Node: 0x4, Component: 0x70, Reason: 0x1, Extra: 0x0

Reason: The collimator stopped responding.

Action: Check fuse 4.4FIB01 F3. Check adapter cable between collimator and OTC. Replace if needed.

Reference: n.a

Connection not established

It is not possible to start connection with a node

Node: 0xF, Component: 0x10, Reason: 0x3, Extra: 0xA

Reason: The system cannot establish connection with a node. The ID of the node that did not respond is available in Extra.

Action: Use the node ID information in Extra to determine which node the Master/Z couldn't establish connection with. Node 0xA, in this example is the Bucky node in table. Confirm that the related power supply is working, that 24/36V is connected to the node and that the CAN-cable is properly connected.

Reference: n.a

DAP device error [72]

Generator Control

Reason: This error message can show because of a generator restart or a generator communication failure. A repeated message indicates that the generator lost communication with the DAP chamber.

NOTE! The generator check DAP connection during its startup sequence. If communication is lost while the generator is on, the error message will not show until after a restart.

Action: Confirm that the system is switched ON from the generator mini console. Restart if applicable. Check connection terminal under tube cover and connection to the generator control board, connector J4.

NOTE! DAP functionality can be turned OFF in the generator service tool Genware MP. This can be useful for trouble shooting purposes or to continue using system without DAP.

Reference: Genware MP, MD-0938.

DMG switch timeout

Report to Service if problem persists

Node: 0x5, Component: 0xB0, Reason: 0xA, Extra: 0x1

Reason: An OTC up/down button with two electrical circuits have been pressed but both circuits was not closed. New DMG state in Extra: 0x0 = Disabled, 0x1 = Enabled.

Action: Check all down buttons on the OTC display unit. Confirm that buttons work consistently when pressed. Replace if needed.

Reference: n.a

Down button inhibited

Report to Service if problem persists

Node: 0x5, Component: 0xB0, Reason: 0xE, Extra: 0x1

Reason: An OTC down button with two electrical circuits have been pressed but both circuits was not closed. Extra: 0x1 = Up, 0x2 = DMG.

Action: Check all down buttons on the OTC display unit. Confirm that buttons work consistently when pressed. Replace if needed.

Reference: n.a

Emergency stop

An emergency stop has been activated

Node: 0xF, Component: 0x10, Reason: 0x10, Extra: 0x0

Reason: Emergency stop button on the OTC has been activated. Check the emergency stop button on OTC.

Action: Deactivate emergency stop when examination room is ready for use again. If problem persists, use Electrical drawings to check the Emergency stop circuit.

Reference: WRD-0073_CS_2.

Emergency stop

An emergency stop has been activated

Node: 0xF, Component: 0x10, Reason: 0xF, Extra: 0x0

Reason: An external emergency stop has been activated. Check emergency stop buttons on Table, Wall stand and any external buttons.

Action: Deactivate emergency stop when examination room is ready for use again.

Reference: UBD_0073_TS_EM_stop, UBD_0073_WS_2_EM_stop.

External potentiometer error

The Master/Z node has detected a problem with the potentiometer in table

Node: 0xF, Component: 0x10, Reason: 0x2, Extra: 0x30C71C0

Reason: This error message is shown if the Master/Z node detects a problem with the height sensor in table. In this situation the table tracking function may be impaired and correct SID may not be presented in the display. A lost potentiometer signal can cause the collimator to adjust light field spontaneously if table mode is activated.

Action: Check calibration of table, adjust if necessary and restart system. Check the “Max speed” setting for Table in the ArcoCeil Service program. Adjust if necessary. Check the connection of the potentiometer cables to the Bucky node 2.1CB02 J4. Measure voltage between J4 5–6. The value should be somewhere between 0V and 5V depending on table height. Check connector 2.Z1J04.

Reference: UBD_0073_TS_Z-Drive

EXP_SW signal active in standby state [62]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x3E

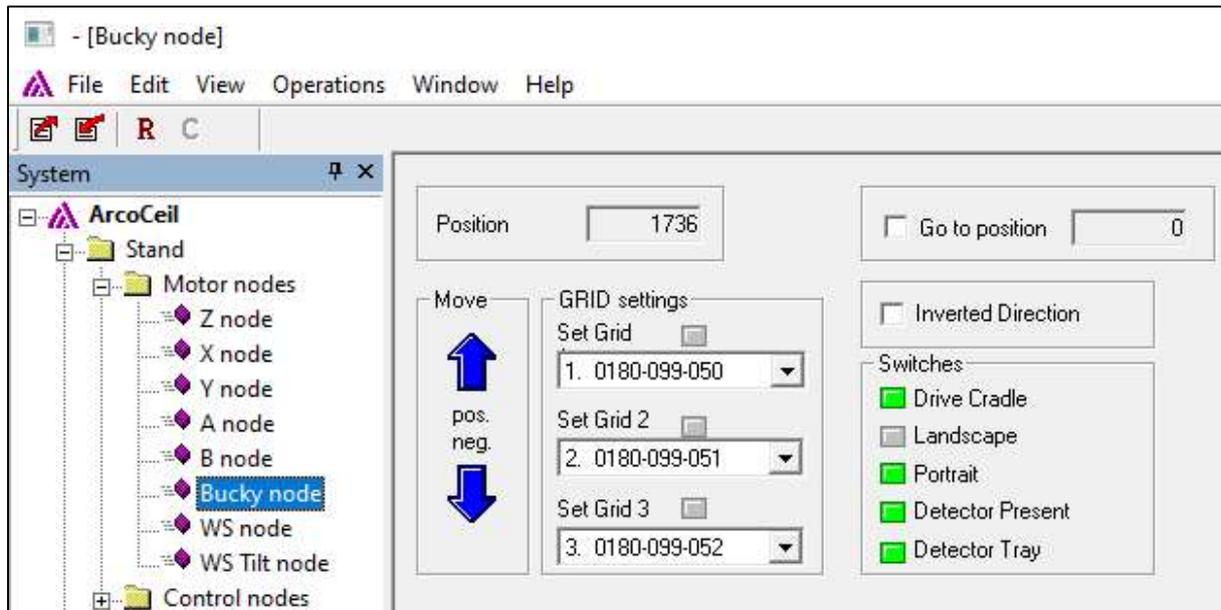
Reason: The exposure button was pressed while the generator was in standby state.

Action: Confirm that the servo is active, yellow servo light is ON, before attempting an exposure. Confirm that no warning symbols are present on the OTC display (Tray inserted, Detector present, Detector orientation).

	<p>Detector tray Detector tray out of position</p>	<p>Push detector tray back in the bucky</p>
	<p>Detector Present Detector not present in the detector tray</p>	<p>Place detector in detector tray</p>
	<p>Landscape / Portrait Detector position needs correction</p>	<p>Make sure the detector tray is in portrait or landscape position</p>

Confirm that the related microswitch inputs are highlighted in the ArcoCeil Service program.

NOTE! Detector must be placed in either Landscape or Portrait position for the system to allow exposure.



Confirm that correct workspace / receptor is selected. Switching workplace without reactivating the servo will result in this error.

NOTE! Switching to a workspace defined for Autopos mode or Free mode without reactivating the servo can lead to an exposure in the wrong place.

Reference: The overwrap log file can provide context to the error. Check the log to find the chain of events leading to the message.

Exposures prohibited

Cannot communicate with Table system

Generator Control

Reason: The Ethernet communication between PC (overwrap software) and CB800 was interrupted or not established. System will inhibit X-ray exposures in this situation.

Action: Check Ethernet cable connection ETH1 on PC and connector J1-ETH1 on the 4.4CB800 module. Confirm that Firewall is turned off on PC or that firewall settings allow this communication.

Use the *Command Prompt* to ping the SystemMaster (CB800 module) on IP-address 192.168.0.1

Reference: n.a

Failed to apply protocol settings

Please correct settings and/or re-select protocol. Check kV, mA, ms, receptor, technique, AEC fields, AEC density, focus.

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x408

Reason: Protocol settings sent from the overwrap software was not confirmed in time by the x-ray system.

Action: Check additional information in error message to understand failed setting.

For example: FilterSelection => confirm selected value in Protocol Editor 0-3 and that collimator is in automatic mode. Tube mA => Check selected value in Protocol Editor.

NOTE! This message can be triggered if the generator is in an error state for any other reason. Clear all error messages and retry. Check overwrap log for context.

Reference: Protocol Editor, Overwrap log.

Failed to apply protocol settings

Please correct settings and/or re-select protocol. Timeout waiting for table system parameters. Filter Selection

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x408

Generator Control

Reason: The filter selection from the protocol was not accepted by the system.

Action: Confirm that the collimator is powered ON, working normally, and set to automatic mode. Check the Filter Selection value from the protocol. The settings value must be 0-3.

Reference: Protocol Editor, Overwrap log.

Failed to apply protocol settings

Please correct settings and/or re-select protocol. Timeout waiting for table system parameters. AutoPosition.

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x408

Reason: Protocol settings, in this case the Autoposition setting, sent from the overwrap software was not confirmed in time by the x-ray system. The error message is shown when the overwrap software requests a change of Autoposition which the 0072-system fail to acknowledge within the specified time.

Action: Confirm that the selected autoposition number is valid, between 0-15, and that it has been correctly defined in the ArcoCeil service program.

Reference: Protocol Editor, Overwrap log, ArcoCeil service program.

Failed to apply protocol settings

Please correct settings and/or re-select protocol. Exceeded maximum ms value.

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x408

Reason: Protocol settings sent from the overwrap software was not confirmed in time by the x-ray system.

Action: Check additional information in error message to understand failed setting.

For example: Exceeded maximum ms value => confirm selected value in Protocol Editor.

NOTE! This error message can show if the overwrap software lost connection with the generator. Check the overwrap log to find signs of interrupted communication. For example: *“Generator Offline”* or *“GEN_LOSTCOMM_OR_INITIALIZE”*.

Confirm that cable 5.OPC01 – I/O (5.ORS232IS) is properly connected to the COM-port of the imaging system PC.

Action: Check RS232 cable 5.OPC01 – I/O (5.ORS232 IS) between imaging system PC, Com-port 1 and generator control board connector J3. Also check D9 connector in cable p/n 0073-750-064.

Reference: Protocol Editor, SBD_C_Image_system, MD-0937.

Support: Overwrap log file.

Generator communication was interrupted or lost

Please reselect protocol

Generator Control

Reason: An exposure was attempted when generator communication was interrupted during an exam. The protocol must be re-selected to make sure proper x-ray parameters are used.

Action: Reselect protocol. If problem persists, check RS232 cable between PC Com-port and generator connector J3.

Reference: n.a

Generator kV limit [203]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0xCB

Reason: Requested kV not allowed as generator kV limit has been reached.

Action: Check technique if this is seen when APR is used.

Reference: Protocol Editor.

Generator mA limit [204]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0xCC

Reason: Requested mA not allowed as generator mA limit has been reached.

Action: Check technique if this is seen when APR is used.

Reference: Protocol Editor.

Generator ms limit [205]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0xCD

Reason: Requested ms not allowed as generator ms limit has been reached.

Action: Check technique if this is seen when APR is used.

Reference: Protocol Editor.

Generator mAs limit [206]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0xCE

Reason: Requested mAs not allowed as generator mAs limit has been reached.

Action: Check technique if this is seen when APR is used.

Reference: Protocol Editor.

Generator offline

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x3FA

Reason: This error message can show because of a generator restart. A repeated message indicates that the serial (RS232) connection between the PC (overwrap software) and the generator was interrupted.

Action: Check RS232 cable *5.0RS232 IS* between PC Com-port 1 and generator control board connector J3. Also check D9 connector in cable p/n 0073-750-064.

Reference: SBD_C_Image_system, MD-0937.

Guard crash

Collision (OTC/Z) has been reported from the guard

Node: 0xF, Component: 0x10, Reason: 0xC, Extra: 0x36B7

Reason: The guard node has detected a collision in Z direction.

Action: Remove obstacle and continue. If persistent error with no obvious reason check calibration of the Guard node from the Arco Ceil Service program.

Information under Extra show Z position (1/10mm). In this example $\approx 140\text{cm}$ ($36B7_{16} \Rightarrow 14007_{10}$)

Reference: ArcoCeil Service program, WRD-0073_CS_2.

Logic power low

The [node name] has detected that the logic power for the board is low

Node: 0x2, Component: 0x2, Reason: 0x4, Extra: 0x0

Reason: A node have detected that the Logic power (24VDC supply) dropped below 18VDC. Se list of node ID's below to find reporting node. Node 0x2 from this example is Alpha.

NOTE! A Logic power low message, usually from the SI-node (node 8) is logged when the system is turned off normally. These entries must not be confused with the error situation.

Action: Determine which node reportedly lost power. Check 24V to the reporting node. Check for damaged cables that could cause momentary shortcuts to ground. Check power supply and appropriate fuses, for example, 1.3F01 if the error comes from the Coll/UI-node or wall stand fuse 3.1F02 if the error comes from the WS Tilt node.

Reference: Electrical diagrams, Fuse list in Installation & Service manual.

mA During exposure too high [11]

Generator Control

Reason: The generator detected that mA during exposure was too high.

Action: Check connection of rotation cable, see UBD-0183_OTC_4_Tube. Check connection of High voltage cables. Measure "actual mA during exposure" using an oscilloscope on the control board TP7. kV feedback can be measured at TP8 and TP9 is GND. Possible parts replacement: X-ray tube, Generator HV module. Using a clamp ampere meter, measure the mA during exposures at different kV stations.

Reference: UBD-0183_OTC_4_Tube, MD-0934.

TP7 – 1V = 100mA of actual anode current.

TP8 – 1V = 20kV of H.V. feedback

Manually terminated exposure [13]

Generator Control

Reason:

1. Operator released exposure switch during exposure.
2. The Gen Interlock signal (present on J25-27) or the Gen em. Interlock signal (present on J25-8) was deactivated while the generator was in exposure phase (exposure not yet started) and did not activate within ten seconds.
3. The Gen Interlock signal (present on J25-27) or the Gen em. Interlock signal (present on J25-8) was deactivated while an exposure was in progress.
4. Exposure button was released by the user in the time frame (maximum ten seconds) where the generator is waiting for the Gen exp. req. signal from the 0072 system.
5. The 0072 system did not activate the Gen exp. req. signal within ten seconds after the generator entered the exposure phase.
6. The input (Bucky 1 Ready, Bucky 2 Ready or Interlock #1) that triggered the exposure becomes inactive while the exposure is in progress. Internal failure of multibox MB-4A

Action:

1. Re-take exposure if necessary. Check for faulty switch contacts or wiring.

Reference: UBD-0073_SC_2_C.

Mode aborted, Bucky cradle

Mode aborted because bucky cradle disengaged.

Node: 0xF, Component: 0x10, Reason: 0x40, Extra: 0x0

Reason: Upon activation of a table mode the software checks that the bucky axis is placed in the drive cradle. If it is not, the motor will move to find it. After a full stroke is performed and the signal from the cradle micro switch was not detected. This message will be displayed.

Action: Place bucky in drive cradle and reactivate mode. Confirm that the input from the cradle microswitch is highlighted in the ArcoCeil Service program.

Reference: Arco Ceil Service program.



Mode aborted, Bucky tray

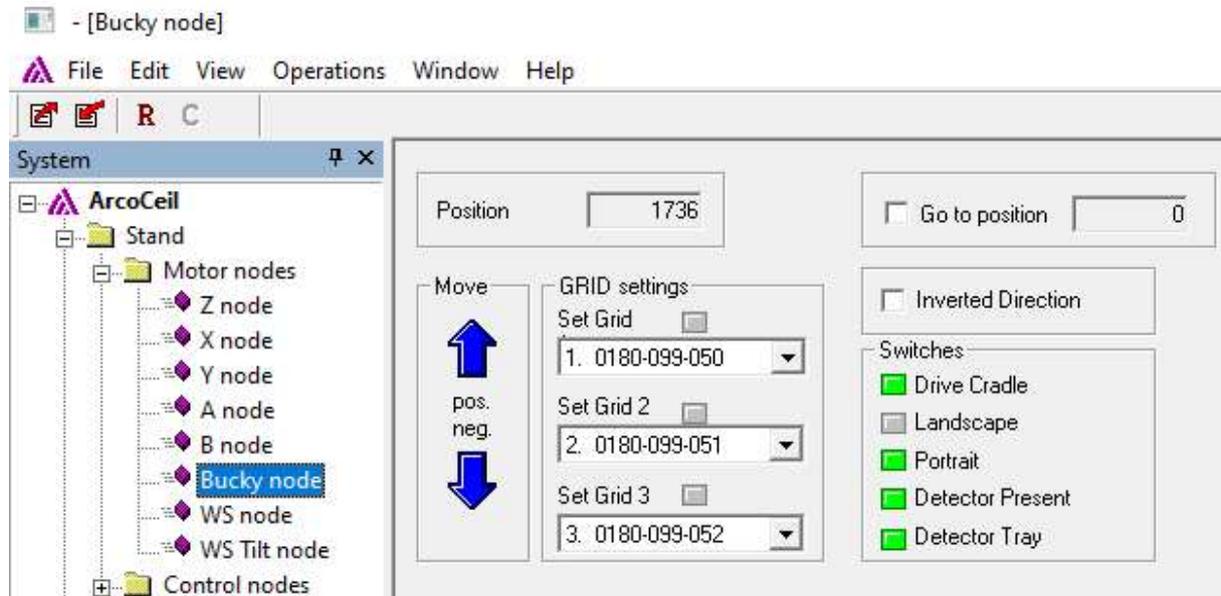
Mode aborted because bucky tray is not in correct position.

Node: 0xF, Component: 0x10, Reason: 0x41, Extra: 0x0

Reason: Motorized movement of the bucky node is prohibited if the detector tray is pulled out.

Action: Place bucky tray in correct position and reactivate mode. Confirm that the input from the Detector tray microswitch is highlighted in the ArcoCeil Service program.

Reference: Arco Ceil Service program.



Mode aborted, Wall detector tray

Mode aborted because the tray is changed while wallstand moving.

Node: 0xF, Component: 0x10, Reason: 0x44, Extra: 0x0

Reason: Motorized movement of the WS node is prohibited if the detector tray is pulled out.

Action: Place bucky tray in correct position and reactivate mode. Confirm that the input from the Detector tray microswitch is highlighted in the Arco Ceil Service program.

Reference: Arco Ceil Service program.

Mode aborted; Node pushed

Mode aborted because system was pushed out of position

Node: 0xF, Component: 0x10, Reason: 0x43, Extra: 0x0

Reason: The OTC was pushed out of position in a direction locked by the selected mode.

Action: Reactivate mode by pressing the servo button. If error persists for no obvious reason, confirm that brake magnets activates and deactivates as intended.

Reference: WRD-0073_CS_2

Mode inhibited [46]

Generator Control

Reason: An APR technique request something that is disabled in the generator setup.

Action: Check log files to identify possible reasons. Perform tube calibration.

Reference: Protocol Editor. Genware MP

No fields selected in AEC mode [55]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x37

Reason: AEC mode is enabled but no fields are selected.

Action: Select AEC field(s) for the requested protocol.

Reference: Protocol Editor. Genware MP

No license for base features. Contact vendor for license support. The software will now exit.

Generator control

Reason: No valid CANONKIT.lic file is available in the overwrap folder of the PC.. Communication between Imaging System and Generator will be inhibited.

Action: Copy the CANONKIT.txt file and send it to Arcoma AB together with the serial number of the generator or system. A CANONKIT.lic file will be returned. Place it in the overwrap folder of the PC and restart system.

Reference: n.a

No Tube Selected [56]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x38

Reason: The requested receptor has no tube assigned.

Action: Program receptor(s) with correct tube number (normally 1). Confirm that selected Receptor is enabled.

Reference: Protocol Editor, GenwareMP.

NOTE! An invalid value can prevent the protocol to be activated. System may not move to position until a valid tube selection setting has been set.

No valid autoposition

No configured autoposition exists for this ID

Reason: The autoposition ID selected by the current exam protocol is not correctly configured.

Action: Enter the settings menu on the OTC display and set User settings => Settings => Autoposition # ON. The selected autoposition ID number is now shown on the screen.

Connect the Arco Ceil service program and check the selected autoposition. Re-calibrated if necessary.

Reference: n.a

Node error - A node has an erroneous state

Make sure all nodes have correct software version. If all are correct report problem to service.

Node: 0xF, Component: 0x10, Reason: 0x8, Extra: 0x9

Reason: The Master/Z-node detected that a CAN-bus node is in an unexpected state. The node ID can be read from the Extra information of the error message. Node #9 is the Wall stand node. See list of node ID's in *Table 1*.

Action: Restart system. If error persists, use information in Extra to locate the node with the error.

Reference: n.a

Pedal function deactivated

0055 Table

Reason: A button was pressed during the start up phase of the table

Action: Disconnect foot switch and/or hand control to determine source of error.

Reference: 0055 Service program.

Positioning system or detector not in position [62]

Re-position system or check detector alignment

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0x3E

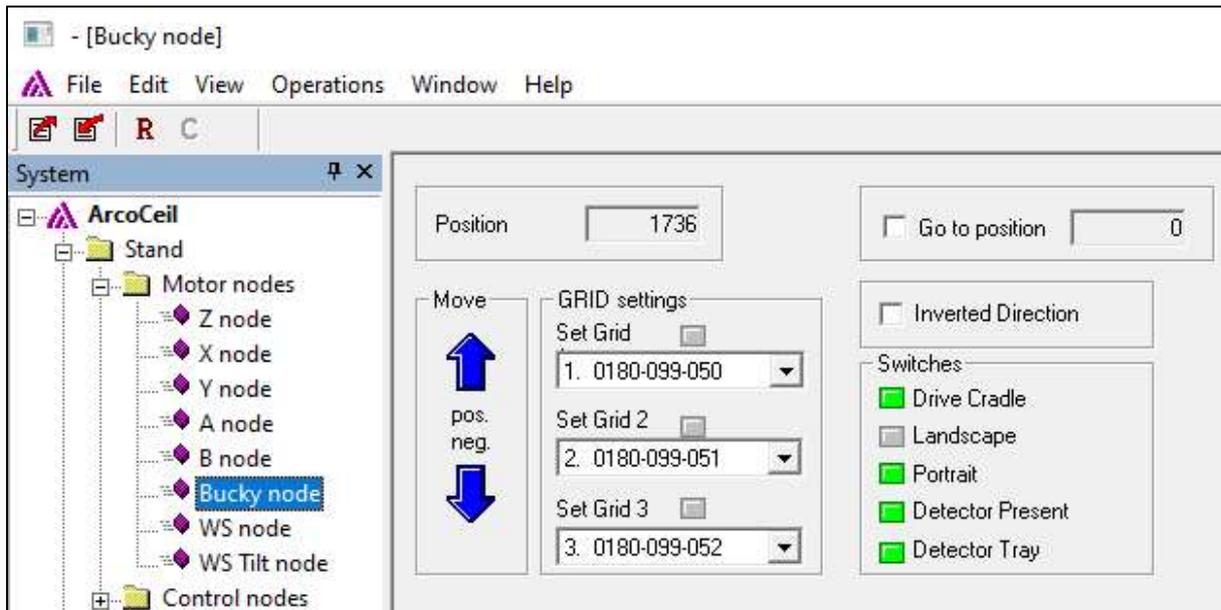
Reason: The exposure button was pressed while the generator was in standby state.

Action: Confirm that the servo is active, yellow servo light is ON, before attempting an exposure. Confirm that no warning symbols are present on the OTC display (Tray inserted, Detector present, Detector orientation).

	<p>Detector tray Detector tray out of position</p>	<p>Push detector tray back in the bucky</p>
	<p>Detector Present Detector not present in the detector tray</p>	<p>Place detector in detector tray</p>
	<p>Landscape / Portrait Detector position needs correction</p>	<p>Make sure the detector tray is in portrait or landscape position</p>

Confirm that the related microswitch inputs are highlighted in the ArcoCeil Service program.

NOTE! Detector must be placed in either Landscape or Portrait position for the system to allow exposure.



Confirm that correct workspace / receptor is selected. Switching workplace without reactivating the servo will result in this error.

NOTE! Switching to a workspace defined for Autopos mode or Free mode without reactivating the servo can lead to an exposure in the wrong place.

Reference: The overwrap log file can provide context to the error. Check the log to find the chain of events leading to the message.

Prep input active during initializing phase [28]

Prep switch closed

CMP200DR Generator

Reason: Prep input was active during power on initializing phase.

Action: Check prep switch and input for short circuit.

Reference: n.a

Rotor Fault [6]

Generator Control

Reason: In the tube preparation phase, current relays in main and shift circuits were not energized.

Action: Check if the X-ray stator cable properly connects to the connector located at the back of the DSS board mounting plate. See generator manual for reference. Check DS 1 on the DSS board if lit, there is a breakdown in the stator or stator circuits. Disconnect stator and retry it, which will isolate where the fault occurred. Verify the DIP-switch settings on the DSS board. The should be set according to the type of tube being used. Check the connection of the X-ray tube end.

Reference: MD-1069.

Servo mode

Tried to select stitching area, but not in active servo mode. Activate servo mode to go to active mode.

Node: 0x20, Component: 0x50, Reason: 0x26, Extra: 0x0

Reason: User tried to define a stitching area, but servo mode is not active.

Action: Confirm that the selected protocol is defined for stitching. This error can be shown when a Static protocol is being defined with an Auto position in stitching mode.

Reference: ArcoCeil Service program.

Shoot through error

Shoot through currents are detected on the H-bridge of the X driver board. Check hardware, replace if needed.

Node: 0x6, Component: 0x4, Reason: 0x3, Extra: 0x0

Reason: The DC driver of the X-node detected shoot through currents. This problem can be caused by a shortcut on the motor side (motor or cable) or an internal error of the X-node.

Action: Disconnect J3 on the DC driver where the motor cables come in. Measure resistance through the motor. It should be around 25Ω. Also measure each motor pin to chassis. There must be no contact.

With J3 disconnected, attempt a motorized movement. If problem persists and the same error message is shown. Replace the X-node.

If a collision error is displayed instead of the Shoot through error with J3 disconnected, the problem is more likely outside the node. Replace motor unit.

NOTE! This error may come together with Temperature error.

Reference: WRD-0073_CS_2 (page 1 and 7)

Size too large

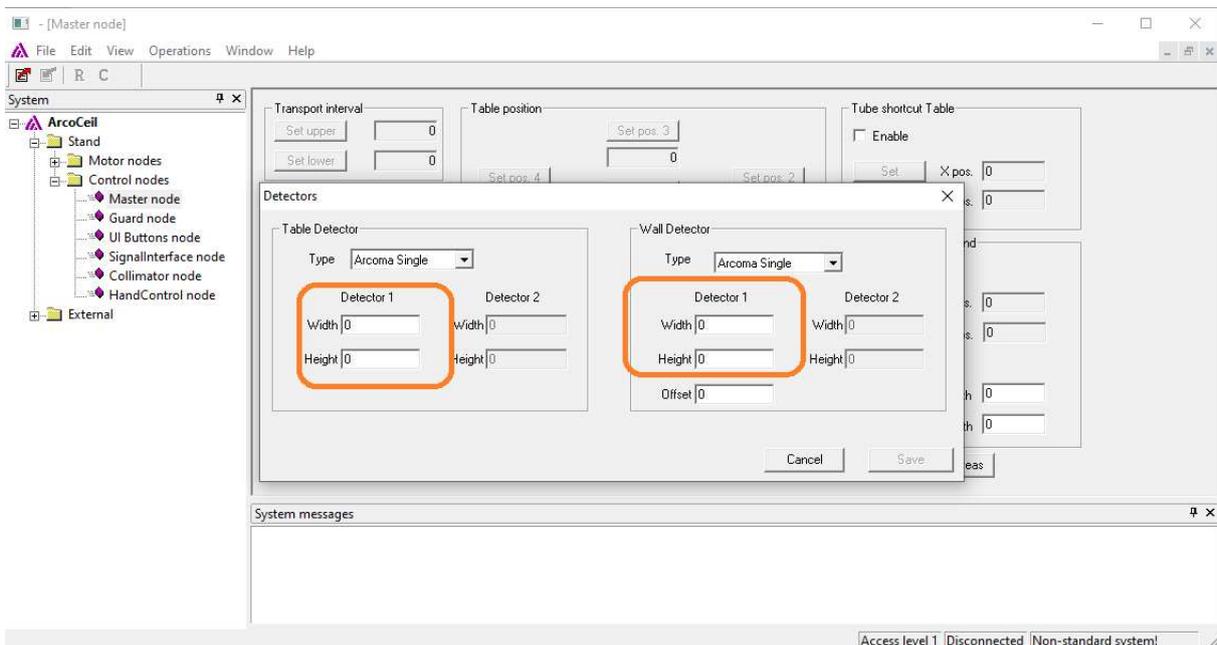
Requested collimator size was outside restriction

Node: 0x4, Component: 0x70, Reason: 0x7, Extra: 0

Reason: The collimator node reports that the requested size from the APR was impossible to set. Most likely because the requested size is bigger than the specified sizes under Master node / Detector parameters:

Action: Check detector size settings in Arco Ceil service program. If found correct. Change requested value in the affected APR to a valid size.

Reference: Protocol editor, ArcoCeil Service program.



Software default error

Software for SystemMaster executed in an incorrect manner

Node: 0x20, Component: 0x1, Reason: 0x1, Extra: 0x5003c5

Reason: This message indicates a mismatch between the image system and Precision software. One unit is in stitching mode, the other is not. Extra: represents: Value + Component + 2 bytes line in code.

Action: Confirm that a stitching protocol is selected from the imaging system and that the protocol is assigned with a stitching mode autoposition.

Reference: Protocol editor, Arco Ceil Service Software.

NOTE! The stitching mode cannot be performed from the ArcoCeil service program or using a Static APR protocol. A stitch protocol from the image system is required for full functionality.

Stitching outside low end position

Not possible to calculate image area parameters request outside detector lowest position

Node: 0x20, Component: 0x50, Reason: 0x23, Extra: 0x235

Reason: The requested stitching area is outside the calibrated end stops for detector movement.

Action: Retry image area definition. Stitching on table is normally available with tube angles ranging from -20° to +20° degrees at standard SID.

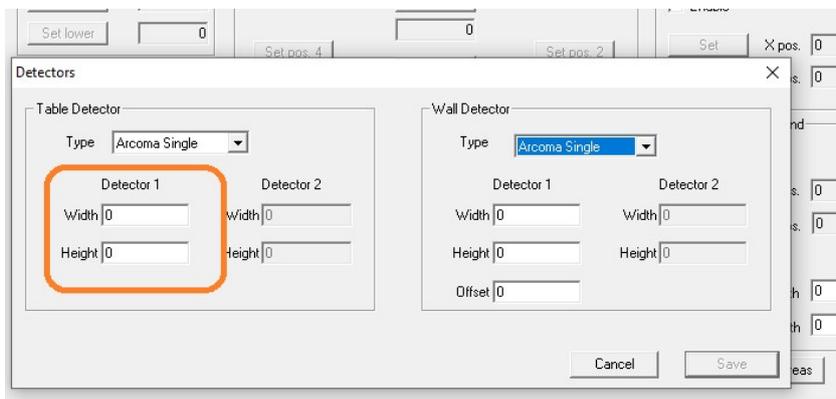
If problem persist, try to define a stitching in the middle of the bucky stroke without moving the tube. The system should select an image size identical to the detector size and prepare for two images.

Move the bucky axis from the table hand control and make sure the software end stops are properly calibrated. A useable stroke slightly below 80cm is normal.

Place X-ray tube aligned with the detector and confirm that the Position values for the Bucky and X (or Y) nodes are the same. Re-calibrate if necessary.

Check detector size settings for the affected workstation (Control nodes => Master node => Detector parameters). Check stitching parameters "StitchingOverlap" and StitchingCollimatorAdjust" (Control nodes => Master node => Stitching param.).

Reference: ArcoCeil Service program.



Transducer diff error

Node: 0x3, Component: 0x3, Reason: 0x1, Extra: 0x0

Reason: The beta node detected an abnormal difference between the encoder and potentiometer values.

Possible causes:

- Defective beta potentiometer
- Defective beta motor (incremental encoder)
- Tooth belt worn or loose
- Mechanical play, screw loose (item 3)
- Defective Alpha/Beta node

Action: The beta node is the only node in the system equipped with two position transducers (potentiometer and incremental encoder). Connect the Arco Ceil service program and check encoder and potentiometer values. Turn beta and confirm that the values change concurrently.

Also check for damaged tooth belts, tooth belt wheel attachment and mechanical play between beta motor unit and OTC.

Reference: n.a

Temperature error

The temperature on the X driver board is too high. Check hardware replace if needed.

Node: 0x6, Component: 0x4, Reason: 0x2, Extra: 0x0

Reason: The DC driver of the X-node detected too high temperature.

Action:

NOTE! This error may come together with Shoot through error.

Reference: n.a

Transducer diff error

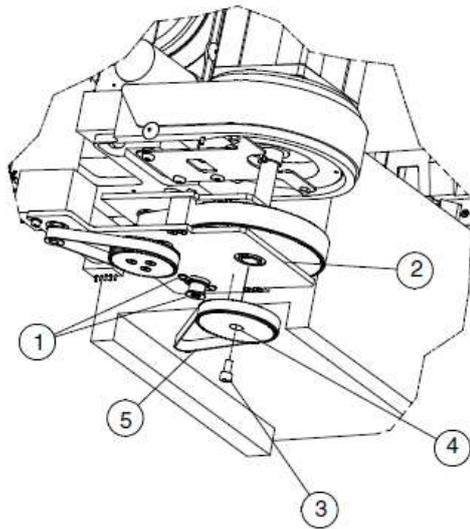
Node: 0x3, Component: 0x3, Reason: 0x1, Extra: 0x0

Reason: A motor node equipped with two position transducers detected that the difference between the sensors are larger than allowed, Defined difference is specified by the "accuracy between transducers" parameter.

Action: The only node with two position sensors, potentiometer and encoder, in the system is Beta (0x3).

Check tooth belts and mechanical attachment points for beta axis.

Center screw (item 3) being loose will cause this problem.



Launch the ArcoCeil Service program on a PC and connect to system (see separate instruction).

Select ArcoCeil => Stand => Motor nodes => B node and monitor the "Enc." And "Pot." Values while turning the tube in beta direction...

Note any irregularities to find out if potentiometer or encoder feedback is inconsistent.

- Defective beta potentiometer
- Defective beta motor (incremental encoder)
- Tooth belt worn or loose
- Mechanical play, screw loose.
- Defective Alpha/Beta node

Reference: n.a

Transducer not present

The position transducer is not connected to the Y node

Node: 0x7, Component: 0x3, Reason: 0x2, Extra: 0x0

Reason: The Y node detected that the position sensor (encoder) was disconnected.

Action: Check wire connections on 1.YCB01 J1 and J3. Replace encoder if needed.

Reference: WRD-0073_CS_2 (page 6).

Transmitt buffer full

Node: 0x20, Component: 0x82, Reason: 0x1, Extra: 0x0

Reason: A command is sent but not properly responded to. The command is repeated until the buffer memory is full.

Action: This error cause interruption in communication and the message cannot be shown in the overwrap log. Use the display log to find date and time of the error and then check the overwrap log to put the error in context. Often, with this error a command message is repeated frequently in the log file until communication is lost. The key to solve the problem is to identify the command that is being repeated.

NOTE! The overwrap software will not accept commands while being busy.

StatusCode=0x10, GCS State= GCS_BUSY"

Make sure, Latched errors on the screen are acknowledged before continuing operation.

Reference: n.a

Trial license period expired

Generator control

Reason: The trial version of the license period for the overwrap software expired. Communication between Imaging System and Generator will be inhibited.

Action: Copy the CANONKIT.txt file and send it to Arcoma AB together with the serial number of the generator or system. A CANONKIT.lic file will be returned. Place it in the overwrap folder of the PC and restart system.

Reference: n.a

Tube mA limit [209]

Generator Control

Node: 0x20, Component: 0x8C, Reason: 0xFF, Extra: 0xD1

Reason: Requested mA not allowed as tube mA limit has been reached.

Action: Use the Protocol Editor to select an appropriate mA value or change focal size.

Reference: Protocol Editor, GenwareMP.

NOTE! An invalid value can prevent the protocol to be activated. System may not move to position until a valid mA setting has been set.

Uncontrolled movement

The {Node:Name} node has detected a Z movement when it should be standing still.

Position of Z in Extra

Node: 0xF, Component: 0x10, Reason: 0x1, Extra: 0xA440B5E

Reason: The Master/Z node detected a position change from the encoder in a situation where no movement should occur.

Action: Check encoder connections to the Master/Z node.

Reference: n.a

Up button inhibited

Report to Service if problem persists

Node: 0x5, Component: 0xB0, Reason: 0xD, Extra: 0x1

Reason: An OTC up button with two electrical circuits have been pressed but both circuits was not closed. Extra: 0x1 = Up, 0x2 = DMG.

Action: Check all up buttons on the OTC display unit. Confirm that buttons work consistently when pressed. Replace if needed.

Reference: n.a

Watchdog timeout

A watchdog timeout has been detected by the Master/Z node.

Node: 0xF, Component: 0x2, Reason: 0x1, Extra: 0x0

Reason: The Master/Z node detected that a node stopped sending watchdog messages over CAN-bus. The error message does not point out the failing node.

Action: Use the Arco Ceil Service program to find the missing node.

The screenshot shows the ArcoCeil Service program interface. On the left is a tree view of the system components. The main area displays a table of system status for various nodes. The 'System' node is in an 'Error' state, while all other nodes are in a 'Disable' state. Below the table is a 'System messages' log showing multiple error entries for 'Node Z'.

	System	Master	Node Z	Node X	Node Y	Node A	Node B
State		Error	Error	Disable	Disable	Disable	Disable
Software version	R0402	A0402	A0402	B0101	B0101	A0100	A0100
Hardware version		R0301	R0301	R0301	R0301	R0301	R0301
Driver version				R0502	R0502	R0000	R0000

	Bucky	Node WS	Node Tilt	SignalInt.	Guard	UI Buttons	Collimator	HandControl
State	Disable	Disable	Disable	-	Disable	Disable	Disable	Disable
Software version	A0106	A0108	A0103	A0201	R0010	B0200	B0200	A0102
Hardware version	R0301	R0301	R0301	R0301	NA	NA	NA	10101
Driver version	R0000	R0000	R0502					

System messages

```

09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:25:06 Error, Node Z, 02 01 00 00 00 00
09:06:54 Error, Node Z, 02 01 00 00 00 00
09:06:54 Error, Node Z, 02 01 00 00 00 00
    
```

Access level 3 Connected

The example shows how the Signal Interface node (SI) is missing. The Master/Z node detected the fault scenario and put itself in Error state. All other nodes are Disabled by the Master/Z node until the problem is cleared.

Reference: ArcoCeil Service program.

Watchdog timeout

No watchdog messages from a slave node was received by OtcMaster node.

Node: 0x0, Component: 0x51, Reason: 0x1, Extra: 0xA0418

Reason: The OTC Master node did not receive watchdog messages from the OTC Collimator node on time. This error is presented when an established CAN bus connection line suddenly interrupts.

2 bytes Slave node Id + 2 bytes indicating the line number in the code. See Table 1 for node ID's. In this example 000A means OTC Collimator node and 0418 (1048) represents a line number in the code.

Action: Check related CAN-cables and power supply to related nodes.

Establish if this problem usually occurs during a specific procedure. For example, while turning the tube, moving OTC etc. An established method to recreate the problem may help understanding and solving it.

Replace cables.

Reference: n.a

Z not moving

Z movement request is not performed

Node: 0xF, Component: 0x10, Reason: 0x18, Extra: 0x0

Reason: The Master/Z node requested a movement, but the encoder value did not change proportionally.

Action: Use trouble shooting guide 0200-095-208 to troubleshoot this problem. Look for visible reasons like cable hose obstructing movement etc.

Reference: Trouble shooting guide 0200-095-208, available on the Arcoma Partner Portal.
WRD_0070-003-250

4 Reference tables

Tabell 1 Node and Component ID

OTC Display			
Node ID:	Node name	Component:	Component name
0xF	Master/Z node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x10	Master/Z Node
		0x11	Client Interface
0x2	Alpha node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
0x3	Beta node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
0x4	Collimator node	0x1	Software
		0x2	Base Node
		0x70	Collimator Node
		0x71	Collimator
0x5	User Interface (UI) node	0x1	Software
		0x2	Base Node
		0xB0	UI Node
0x6	X node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
		0x30	X/Y Buttons
0x7	Y node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
		0x30	X/Y Buttons
0x8	Signal Interface (SI) node	0x1	Software
		0x2	Base Node
		0x50	SI Node
0x9	Wall Stand node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
		0xC0	WS Node

Cont. Table 1 Node and Component ID

OTC Display			
Node ID:	Node name	Component:	Component name
0xA	Bucky node (table)	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
		0x7	Bucky Node
0xB	WS Tilt node	0x1	Software
		0x2	Base Node
		0x3	Motor node
		0x4	Driver
		0xC0	Wall stand buttons
0xD	Hand Control node	0xCD	Hand Control
0x20	System Master	0x1	Software
		0xA	CAN Server
		0x6E	Ceiling System
		0x50	System
		0x78	Display
		0x82	CPI
		0x8C	CPI Protocol
		0xC8	CAN Repeater

Table 2. Button pressed at start-up

Button pressed at startup Log messages, OTC display. (hexadecimal)	Explanation
Node: 0x4 Component: 0x71 Reason: 0x1A Extra 0xC8	Collimator node, Collimator light button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x1	UI-node, Z up button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x2	UI-node, Z down button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x4	UI-node, A/B down button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x8	UI-node, X button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x10	UI-node, Y button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x200	UI-node, Servo button (1)
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x256	UI-node, X/Y button
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x2000	UI-node, Servo button (2)
Node: 0x5 Component: 0xB0 Reason: 0x1 Extra 0x2200	UI-node, Servo button (both circuits)
Node: 0x5 Component: 0xB0 Reason: 0x3 Extra 0x0	UI-node, X button
Node: 0x5 Component: 0xB0 Reason: 0x5 Extra 0x0	UI-node, X/Y button
Node: 0x5 Component: 0xB0 Reason: 0x6 Extra 0x0	UI-node, Z up button
Node: 0x5 Component: 0xB0 Reason: 0x7 Extra 0x0	UI-node, Z down button
Node: 0x7 Component: 0x30 Reason: 0x1 Extra 0x1	Y node (remote control), Z up button
Node: 0x7 Component: 0x30 Reason: 0x2 Extra 0x3	Y node (remote control), Servo button
Node: 0x7 Component: 0x30 Reason: 0x3 Extra 0x0	Y node (remote control), Collimator light button
Node: 0x8 Component: 0x50 Reason: 0x1 Extra 0x1	SI node, External Servo button
Node: 0x8 Component: 0x50 Reason: 0x1 Extra 0x1	SI node, Exposure handle
Node: 0x8 Component: 0x50 Reason: 0x1 Extra 0x1	SI node, Wall stand collimator control handle
Node: 0x8 Component: 0x50 Reason: 0x1 Extra 0x1	SI node, Table collimator control handle
Node: 0x8 Component: 0x50 Reason: 0x3 Extra 0x0	SI node, External servo button (DMG)
Node: 0x8 Component: 0x50 Reason: 0x4 Extra 0x0	SI node, Exposure button
Node: 0x8 Component: 0x50 Reason: 0x5 Extra 0x0	SI node, Collimator manual mode button
Node: 0x8 Component: 0x50 Reason: 0x6 Extra 0x0	SI node, Collimator width close button
Node: 0x8 Component: 0x50 Reason: 0x7 Extra 0x0	SI node, Collimator width open button
Node: 0x8 Component: 0x50 Reason: 0x8 Extra 0x0	SI node, Collimator height close button
Node: 0x8 Component: 0x50 Reason: 0x9 Extra 0x0	SI node, Collimator height open button
Node: 0x8 Component: 0x50 Reason: 0x10 Extra 0x0	SI node, Collimator light button
Node: 0x9 Component: 0xC0 Reason: 0x3 Extra 0x0	WS node, Up button (foot control)
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0x1	Bucky node, Detector left button
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0x4	Bucky node, Tomo right button
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0xA	Bucky node, Detector right button
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0x14	Bucky node, Tomo left button
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0xC8	Bucky node, Cutline dec. button
Node: 0xA Component: 0x7 Reason: 0x1 Extra 0x7D0	Bucky node, Cutline inc. button

Cont. Table 2. Button pressed at start-up

Button pressed at startup Log messages, OTC display. (hexadecimal)	Explanation
Node: 0xD Component: 0xCD Reason: 0x1 Extra 0x0	Hand control node, WS tilt up button
Node: 0xD Component: 0xCD Reason: 0x2 Extra 0x0	Hand control node, WS tilt down button
Node: 0xD Component: 0xCD Reason: 0x3 Extra 0x0	Hand control node, Pendulum up button
Node: 0xD Component: 0xCD Reason: 0x4 Extra 0x0	Hand control node, Pendulum down button
Node: 0xD Component: 0xCD Reason: 0x5 Extra 0x0	Hand control node, WS Z up button
Node: 0xD Component: 0xCD Reason: 0x6 Extra 0x0	Hand control node, WS Z down button
Node: 0xD Component: 0xCD Reason: 0x7 Extra 0x0	Hand control node, Collimator width open button
Node: 0xD Component: 0xCD Reason: 0x8 Extra 0x0	Hand control node, Collimator width close button
Node: 0xD Component: 0xCD Reason: 0x9 Extra 0x0	Hand control node, Collimator height open button
Node: 0xD Component: 0xCD Reason: 0xA Extra 0x0	Hand control node, Collimator height close button
Node: 0xD Component: 0xCD Reason: 0xB Extra 0x0	Hand control node, Servo button
Node: 0xD Component: 0xCD Reason: 0xC Extra 0x0	Hand control node, WS Z brake release button
Node: 0xD Component: 0xCD Reason: 0xD Extra 0x0	Hand control node, Collimator light button

Table 3. Collision types

Collision types		
#	Description	Action
1	Control error larger than specified by the "max position error" parameter.	<ul style="list-style-type: none"> - Remove any blocking obstacle. - Check mechanics - Check that the correct parameter file is used.
2	Time out, did not reach final position in time.	<ul style="list-style-type: none"> - Remove any blocking obstacle. - Check mechanics - Check that the correct parameter file is used.
3	No power, the power to the DC-board was switched off during a movement.	<ul style="list-style-type: none"> - Check the 36V power voltage (measure at the power connector of the DC-board). - Check the DC-board fuse.
4	Drive unit externally inhibited.	<ul style="list-style-type: none"> - Check that the voltage between J3-2 and J3-6 as well as J3-3 and J3-6 are 0V (measure on DC-board).
5	Position transducer has not moved. Output voltage was applied for a specified time but no movement was detected.	<ul style="list-style-type: none"> - Remove any blocking obstacle. - Check mechanics - Check that the correct parameter file is used. - Check position transducer.

Table 4. Mode ID's.

Mode ID's	
Mode:	Mode name
0x1	Free mode
0x2	Autoposition mode
0x5	Film tracking mode
0x7	Pendulum mode (table)
0x9	Table flexible mode
0xA (10)	Wall flexible mode
0xC (12)	Stitching table mode
0xD (13)	Stitching wall mode
See installation & Service manual for functional descriptions of modes.	

5 Miscellaneous Faults (no error message)

Autopositions are drifting

Symptom: OTC autoposition is not stable over time. Positions appear to be drifting.

Action: Use trouble shooting guide 0200-095-202.

Reference: 0200-095-202.

Mechanical issues with floating table top

Symptom:

- Brakes not releasing enough or at all (more than 30Nm force needed)
- Brakes not locking table top appropriately in idle mode
- Floating movement in X/Y direction is too heavy

Action: Use trouble shooting guide 0200-095-209.

Reference: 0200-095-209.

Table Z (0055) not driving.

Symptom: The table is not moving in up/down direction.

Action: Use trouble shooting guide 0200-095-203.

Reference: 0200-095-203.