# Troubleshooting

In the error codes different words have been used for the same thing:

* On the Safety Control Board: Processor A = A uP = SafetySys1
* On the Safety Control Board: Processor B = B uP = SafetySys2

PSU = Power Supply

Open log files with Support Log Reader.

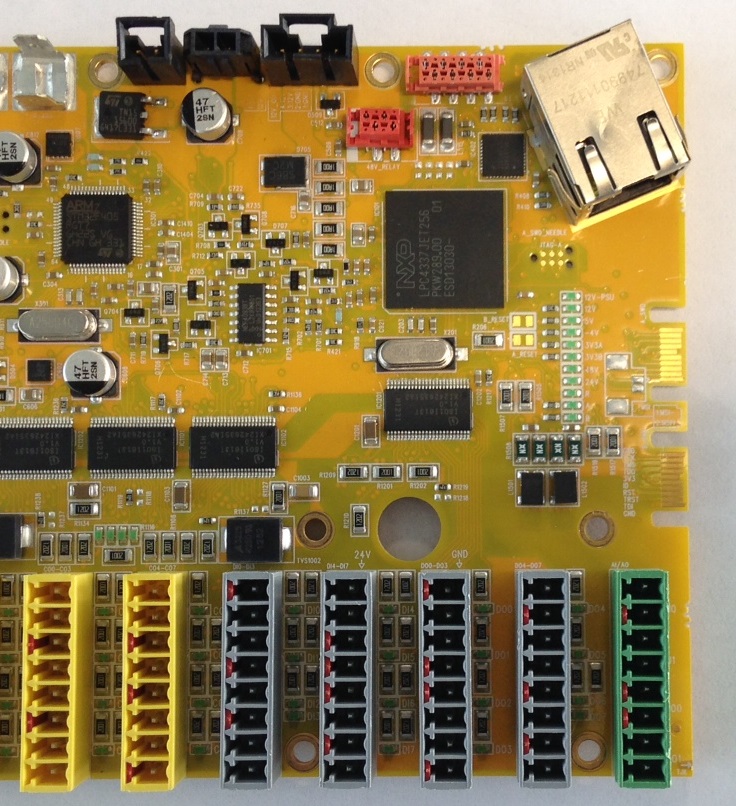
Go to <http://www.universal-robots.com/support/> to download Support Log Reader

## 5.1 Error codes

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Error description | Explanation | How to fix |
| CODE\_0 | No error |  |  |
| CODE\_1 | Outbuffer overflow error |  |  |
| CODE\_1A1 | Buffer of stored warnings overflowed |  |  |
| CODE\_1A2 | Outbuffer to RS485 overflowed (problem with PCs message) |  |  |
| CODE\_2 | Inbuffer overflow error |  |  |
| CODE\_3 | Processor overloaded error | Processor in any part could give this error. |  |
| CODE\_4 | Broken communication |  |  |
| CODE\_4A1 | Communication with PC lost. | Between Safety Control Board and Motherboard |  |
| CODE\_4A2 | Communication with Safety Control Board A uP lost | If either processor A or processer B is communicating, the Safety Control Board or cable between the Motherboard and Safety Control Board is defect | a) Check TCP/IP connection between Motherboard and Safety Control Board. b) Exchange Safety Control Board |
| CODE\_4A3 | Communication with Safety Control Board B uP lost | If either processor A or processer B is communicating, the Safety Control Board or cable between the Motherboard and Safety Control Board is defect | a) Check TCP/IP connection between Motherboard and Safety Control Board. b) Exchange Safety Control Board |
| CODE\_4A4 | Communication with primary Teach Pendant uP lost | If either processor A or processer B is communicating, the Teach Pendant or cable between the Motherboard and Teach Pendant is defect | a) Check TCP/IP-12V connection between Motherboard and Teach Pendant. b) Exchange Teach Pendant |
| CODE\_4A5 | Communication with secondary Teach Pendant uP lost | If either processor A or processer B is communicating, the Teach Pendant or cable between the Motherboard and Teach Pendant is defect | a) Check TCP/IP-12V connection between Motherboard and Teach Pendant. b) Exchange Teach Pendant |
| CODE\_4A6 | Communication with primary EUROMAP67 uP lost | If either processor A or processer B is communicating, Euromap67 or cable between the Motherboard and Euromap is defect | a) Check Euromap67 connection between Motherboard and Euromap67. b) Exchange Euromap67 |
| CODE\_4A7 | Communication with secondary EUROMAP67 uP lost | If either processor A or processer B is communicating, Euromap67 or cable between the Motherboard and Euromap is defect | a) Check Euromap67 connection between Motherboard and Euromap67. b) Exchange Euromap67 |
| CODE\_4A8 | Primary EUROMAP67 uP present, but euromap67 is disabled | Incorrect safety configuration | Update the miscellaneous settings in the Safety Configuration |
| CODE\_4A9 | Secondary EUROMAP67 uP present, but euromap67 is disabled | Incorrect safety configuration | Update the miscellaneous settings in the Safety Configuration |
| CODE\_4A10 | Primary Teach Pendant present, but Teach Pendant safety is disabled | Incorrect safety configuration | Update the miscellaneous settings in the Safety Configuration |
| CODE\_4A11 | Secondary Teach Pendant uP present, Teach Pendant safety is disabled | Incorrect safety configuration | Update the miscellaneous settings in the Safety Configuration |
| CODE\_4A12 | Communication with joint 0 lost | More than 1 package lost |  |
| CODE\_4A13 | Communication with joint 1 lost | More than 1 package lost |  |
| CODE\_4A14 | Communication with joint 2 lost | More than 1 package lost |  |
| CODE\_4A15 | Communication with joint 3 lost | More than 1 package lost |  |
| CODE\_4A16 | Communication with joint 4 lost | More than 1 package lost |  |
| CODE\_4A17 | Communication with joint 5 lost | More than 1 package lost |  |
| CODE\_4A18 | Communication with tool lost | More than 1 package lost |  |
| CODE\_4A65 | Lost package from Primary Teach Pendant | 1 package lost - warning |  |
| CODE\_4A66 | Lost package from Secondary Teach Pendant | 1 package lost - warning |  |
| CODE\_4A67 | Lost package from Primary Euromap67 | 1 package lost - warning |  |
| CODE\_4A68 | Lost package from Secondary Euromap67 | 1 package lost - warning |  |
| CODE\_4A69 | Lost package from Secondary Masterboard | 1 package lost - warning |  |
| CODE\_4A70 | Lost package from joint 0 | 1 package lost - warning |  |
| CODE\_4A71 | Lost package from joint 1 | 1 package lost - warning |  |
| CODE\_4A72 | Lost package from joint 2 | 1 package lost - warning |  |
| CODE\_4A73 | Lost package from joint 3 | 1 package lost - warning |  |
| CODE\_4A74 | Lost package from joint 4 | 1 package lost - warning |  |
| CODE\_4A75 | Lost package from joint 5 | 1 package lost - warning |  |
| CODE\_4A76 | Lost package from tool | 1 package lost - warning |  |
| CODE\_4A77 | Lost package from uPA to joints | 1 package lost - warning |  |
| CODE\_4A78 | Lost package from uPA to teach pendant | 1 package lost - warning |  |
| CODE\_4A79 | Lost package from uPA to uPB | 1 package lost - warning |  |
| CODE\_4A80 | Lost package from uPB | 1 package lost - warning |  |
| CODE\_4A81 | Packet counter disagreement in packet from Primary Screen |  |  |
| CODE\_4A82 | Packet counter disagreement in packet from Secondary Screen |  |  |
| CODE\_4A83 | Packet counter disagreement in packet from Primary Euromap67 |  |  |
| CODE\_4A84 | Packet counter disagreement in packet from Secondary Euromap67 |  |  |
| CODE\_4A85 | Packet counter disagreement in packet from Safety Control Board B |  |  |
| CODE\_4A86 | Packet counter disagreement in packet from joint 0 |  |  |
| CODE\_4A87 | Packet counter disagreement in packet from joint 1 |  |  |
| CODE\_4A88 | Packet counter disagreement in packet from joint 2 |  |  |
| CODE\_4A89 | Packet counter disagreement in packet from joint 3 |  |  |
| CODE\_4A90 | Packet counter disagreement in packet from joint 4 |  |  |
| CODE\_4A91 | Packet counter disagreement in packet from joint 5 |  |  |
| CODE\_4A92 | Packet counter disagreement in packet from tool |  |  |
| CODE\_4A93 | Packet counter disagreement in packet from processor A to joints |  |  |
| CODE\_4A94 | Packet counter disagreement in packet from processor A to B |  |  |
| CODE\_4A95 | Packet counter disagreement in packet from processor A to Teach Pendant and EUROMAP |  |  |
| CODE\_5 | Heavy processor load warning |  |  |
| CODE\_5A1 | Heavy processor load warning:1 |  |  |
| CODE\_5A2 | Heavy processor load warning:2 |  |  |
| CODE\_10 | Broken PC communication error |  | Eventually update the software |
| CODE\_10A1 | Lost packet from PC |  | Eventually update the software |
| CODE\_10A101 | PC packet received too early |  | Eventually update the software |
| CODE\_10A102 | Packet counter does not match |  | Eventually update the software |
| CODE\_10A103 | PC is sending packets too often |  | Eventually update the software |
| CODE\_11 | Bad CRC error | Serial communication problem with joint | Check black 2-wire connectors and wires in joints. Eventually 2 joints with the same ID. |
| CODE\_12 | Unknown message error |  |  |
| CODE\_14 | Debug message |  |  |
| CODE\_14A1 | {float} | Should not occur in the field | Do you see this error on a robot report it to Universal Robots. |
| CODE\_14A2 | {signed} | Should not occur in the field | Do you see this error on a robot report it to Universal Robots. |
| CODE\_14A3 | {unsigned} | Should not occur in the field | Do you see this error on a robot report it to Universal Robots. |
| CODE\_17 | Inbuffer overflow in package from PC | Communication error between Safety Control Board and Motherboard | Check ethernet connection between circuit boards. Eventually update the software |
| CODE\_26 | Motor Encoder index drift detected | Joint mechanical problem | Replace joint |
| CODE\_27 | Calibration data is invalid or does not exist, selftest is needed! |  |  |
| CODE\_29 | Online Calibration data checksum failed | Calibration data is not in the joint | a) Power OFF and Power ON. b) replace joint |
| CODE\_30 | Master received data from too many joints |  |  |
| CODE\_31 | Caught wrong message (not from master) | Serial communication problem with joint | Check black 2-wire connectors and wires in joints |
| CODE\_32 | Flash write verify failed | Debug message | Ignor |
| CODE\_33 | Calibration flash checksum failed |  |  |
| CODE\_34 | Program flash checksum failed |  | Update Firmware |
| CODE\_34A0 | Program flash checksum failed during bootloading |  | Update Firmware |
| CODE\_34A1 | Program flash checksum failed at runtime |  | Update Firmware |
| CODE\_35 | Joint ID is undefined |  |  |
| CODE\_36 | Illegal bootloader command | Debug message | Ignor |
| CODE\_37 | Inbuffer parse error | Serial communication problem with joint | Check black 2-wire connectors and wires in joints |
| CODE\_38 | Online RAM test failed |  | Replace Item |
| CODE\_38A1 | Data-bus test failed |  | Replace Item |
| CODE\_38A2 | Address-bus stuck-high test failed |  | Replace Item |
| CODE\_38A3 | Address-bus stuck-low test failed |  | Replace Item |
| CODE\_38A4 | Address-bus shorted test failed |  | Replace Item |
| CODE\_38A5 | Memory-cell test failed |  | Replace Item |
| CODE\_39 | Logic and Temporal Monitoring Fault |  |  |
| CODE\_39A1 | Max current deviation failure |  | The joint is broken, it must be replaced |
| CODE\_39A2 | Max joint-encoder speed exceeded |  | The joint is broken, it must be replaced |
| CODE\_39A3 | Max motor-encoder speed exceeded |  | The joint is broken, it must be replaced |
| CODE\_39A4 | Illegal state change in joint detected |  | If this error occurs several times, report it as a bug |
| CODE\_39A5 | Too fast state change in joint detected |  | If this error occurs several times, report it as a bug |
| CODE\_39A6 | 5V regulator voltage too low |  | Replace joint |
| CODE\_39A7 | 5V regulator voltage too high |  | Replace joint |
| CODE\_39A100 | Watchpoint fault: ADC task timeout |  |  |
| CODE\_39A101 | Watchpoint fault: Motor-Control task timeout |  |  |
| CODE\_39A102 | Watchpoint fault: Motor-encoder task timeout |  |  |
| CODE\_39A103 | Watchpoint fault: Joint-encoder task timeout |  |  |
| CODE\_39A104 | Watchpoint fault: Communication task timeout |  |  |
| CODE\_39A105 | Watchpoint fault: RAM-test task timeout |  |  |
| CODE\_39A106 | Watchpoint fault: CalVal-test task timeout |  |  |
| CODE\_39A107 | Watchpoint fault: ROM-test task timeout |  |  |
| CODE\_40 | AD-Converter hit high limit joint | EMC issue external or electronics internal | Check grounding and shielding for EMC problems |
| CODE\_44 | CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Check black 2-wire connectors and wires in joints |
| CODE\_44A0 | Joint 0 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 0 |
| CODE\_44A1 | Joint 1 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 1 |
| CODE\_44A2 | Joint 2 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 2 |
| CODE\_44A3 | Joint 3 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 3 |
| CODE\_44A4 | Joint 4 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 4 |
| CODE\_44A5 | Joint 5 CRC check failure on primary bus | Serial communication problem with joint or secondary bus node | Replace joint 5 |
| CODE\_44A6 | Tool CRC check failure on primary bus | Serial communication problem with tool or secondary bus node | Replace Tool mounting bracket |
| CODE\_44A80 | CRC Check failure on primary bus | Most likely an interference on the communication bus | a) Check green 2-wire connectors and wires in joints, b) If the error reappears contact your local service provider for assistance. |
| CODE\_45 | AD-Converter error |  | Replace Item |
| CODE\_46 | Loose gearbox or bad encoder mounting | Mechanical problem in gear related to encoder mounting | Replace joint |
| CODE\_47 | AD-Converter hit low limit | EMC issue external or electronics internal | a) Check grounding and shielding for EMC problems. b) Replace Item |
| CODE\_48 | Powerbus voltage drop detected. | Error on 48V powerbus to robot arm | Check 48V output from PSU. Check current-distributor PCB. Replacement of 48V PSU or current-distributor is necessary |
| CODE\_49 | RS485 receive warning |  |  |
| CODE\_49A200 | Secondary RS485 bus is down | Bus for: Teach Pendant, Processor A and Processor B on the Safety Control Board. | Check TCP/IP-12V cable to Teach Pendant |
| CODE\_50 | Robot powerup failure | Electrical error control box | Remove all external connections to I/O-interface of Safty Control Board. Check for short circuit. Argument of error code specifies in details what causes the error. |
| CODE\_50A1 | Voltage detected at 24V rail before startup |  |  |
| CODE\_50A2 | Voltage present at unpowered robot |  |  |
| CODE\_50A5 | Powersupply voltage too low |  |  |
| CODE\_50A6 | Powersupply voltage too high |  |  |
| CODE\_50A11 | Voltage not detected at 24V rail after startup | 24 V to the I/O interface in the controller |  |
| CODE\_50A15 | Warning, waiting for SafetySYS2 | SafetySYS2 = Processor B on Safety Control Board |  |
| CODE\_50A16 | The Teach Pendant does not respond | Loose wire or incorrect safety configuration. Message comes from Safety Control Board | Check the cable or change in the Safety Configuration of the Installation the miscellaneous settings |
| CODE\_50A17 | The Euromap67 interface does not respond | Loose wire or incorrect safety configuration | Check the cable or change in the Safety Configuration of the Installation the miscellaneous settings |
| CODE\_50A18 | Warning, waiting for SafetySYS1 | SafetySYS1 = Processor A on Safety Control Board |  |
| CODE\_50A20 | 5V, 3V3 or ADC error (5V too high) |  |  |
| CODE\_50A21 | 5V, 3V3 or ADC error (5V too low) |  |  |
| CODE\_50A22 | Robot current sensor reading too high |  |  |
| CODE\_50A23 | Robot current sensor reading too low |  |  |
| CODE\_50A24 | 48V not present (Check internal connection) |  | Look in service manual for further information. |
|  | C50A24 Check internal connection. This error can have several root causes and you have to measure the voltage some places. There are 3 different components that could be the root cause and you have to measure the voltage to determine which one of them that is the faulty one. - 48 V power supply - Current distributor - Safety Control Board. Find the schematic drawing in the this service manual | | |
| CODE\_50A25 | Robot voltage present at 48V PSU powereup |  |  |
| CODE\_50A26 | Voltage present on unpowered 48V power supply |  |  |
| CODE\_50A27 | 12V, 3V3 or ADC error (12V too high) |  |  |
| CODE\_50A28 | 12V, 3V3 or ADC error (12V too low) |  |  |
| CODE\_50A29 | Analog I/O error (-12V too high) |  |  |
| CODE\_50A30 | Analog I/O error (-12V too low) |  |  |
| CODE\_50A31 | The other safetySYS do not initialize |  |  |
| CODE\_50A40 | Wrong voltage from PSU1 |  |  |
| CODE\_50A41 | Wrong voltage from PSU2 |  |  |
| CODE\_50A42 | Voltage will not disappear from PSU |  |  |
| CODE\_50A43 | Warning, waiting for CB2 type answer from primary processor |  |  |
| CODE\_50A50 | Processor A 3.3V supply voltage out of bounds |  |  |
| CODE\_50A51 | Robot voltage below threshold |  |  |
| CODE\_50A52 | Robot voltage above threshold |  |  |
| CODE\_50A53 | 58V generator deviation error |  |  |
| CODE\_50A54 | 5V regulator too low |  |  |
| CODE\_50A55 | 5V regulator too high |  |  |
| CODE\_50A56 | -4V generator too low |  |  |
| CODE\_50A57 | -4V generator too high |  |  |
| CODE\_50A80 | Last CPU reset caused by Low-Power-Reset |  |  |
| CODE\_50A81 | Last CPU reset caused by Window-Watchdog-Reset |  |  |
| CODE\_50A82 | Last CPU reset caused by Independent-Watchdog-Reset |  |  |
| CODE\_50A83 | Last CPU reset caused by Software-Reset |  |  |
| CODE\_50A84 | Last CPU reset caused by External-Pin-Reset |  |  |
| CODE\_50A85 | Last CPU reset caused by Brown-Out-Reset |  |  |
| CODE\_50A99 | Wrong software on PCB |  |  |
| CODE\_50A100 | Cable not connected | Robot Problem: Robot Cable is not detected |  |
| CODE\_50A101 | Short circuit in robot detected or wrong robot connected to control box | Robot Problem: 48V or wrong robot type | Check robot type. Look for short circuit In cable and in robot arm. |
| CODE\_50A102 | Voltage rising too slowly | Robot Problem: 48V |  |
| CODE\_50A103 | Voltage failed to reach acceptable level | Robot Problem: 48V |  |
| CODE\_51 | CRC check failure on secondary bus |  |  |
| CODE\_51A0 | Processor B |  |  |
| CODE\_51A1 | Primary screen processor |  |  |
| CODE\_51A2 | Secondary screen processor |  |  |
| CODE\_51A3 | Primary E67 |  |  |
| CODE\_51A4 | Secondary E67 |  |  |
| CODE\_53 | IO overcurrent detected | Safety Control Board error | Remove all external connections to I/O-interface of Safety Control Board. Check for short circuit |
| CODE\_53A1 | IO overcurrent detected, max is 800mA | Safety Control Board error | Remove all external connections to I/O-interface of Safety Control Board. Check for short circuit |
| CODE\_53A2 | IO overcurrent detected, max is 600mA | Tool error | Remove tool connector. Check for short circuit |
| CODE\_55 | Safety system error | Safety system malfunction | Check Motherboard, Safety Control Board, Screenboard, Current distributor( Euromap, if installed ). Bypass safety connections to I/O-interface of Safety Control Board |
| CODE\_55A23 | Safety relay error (minus connection) | Current distributor error | Fault: Cable SCB-Current distributor or 48V Power supply or Current distributor. |
| CODE\_55A24 | Safety relay error (plus connection) | Current distributor error | Fault: Cable SCB-Current distributor or 48V Power supply or Current distributor. |
| CODE\_55A33 | Safety relay error (a relay is stuck) | Current distributor error | Fault: Cable SCB-Current distributor or 48V Power supply or Current distributor. |
| CODE\_55A34 | Safety relay error (relays are not on) | Current distributor error | Fault: Cable SCB-Current distributor or 48V Power supply or Current distributor. |
| CODE\_55A50 | Voltage present at unpowered robot | SCB hardware fault | Replace Safety Control Board (SCB) |
| CODE\_55A51 | Voltage will not disappear from robot | SCB hardware fault | Replace Safety Control Board (SCB) |
| CODE\_55A52 | 5V, 3V3 or ADC error (5V too low) | SCB hardware fault | Replace Safety Control Board (SCB) |
| CODE\_55A53 | 5V, 3V3 or ADC error (5V too high) | SCB hardware fault | Replace Safety Control Board (SCB) |
| CODE\_55A90 | Bootloader error, robot voltage too low or current too high |  |  |
| CODE\_55A91 | Bootloader error, robot voltage too high |  |  |
| CODE\_55A100 | Safety violation |  |  |
| CODE\_55A101 | Safety Channel Error In Safety Control Board |  |  |
| CODE\_55A102 | Safety Channel Error In Screen |  |  |
| CODE\_55A103 | Safety Channel Error In Euromap67 Interface |  |  |
| CODE\_55A109 | Received fault message from PC |  |  |
| CODE\_55A110 | Safety State is changing too often |  |  |
| CODE\_55A111 | On/Off State is changing too often |  |  |
| CODE\_55A112 | Robot current sensors readings differ |  |  |
| CODE\_55A120 | Robot current is too high while emergency stopped |  |  |
| CODE\_55A121 | Robot current is too high while safeguard stopped |  |  |
| CODE\_56 | Overvoltage shutdown | Voltage exceeded 55V | Check Energy Eater. Cable to Energy eater, Replace Energy Eater |
| CODE\_57 | Brake release failure |  | Check Brake, solonoide, Payload, TCP and Mount |
| CODE\_57A1 | Joint did not move or motor encoder is not functioning |  | Check Brake, solonoide, Payload, TCP and Mount |
| CODE\_57A2 | Large movement detected during brake release |  | Check Brake, solonoide, Payload, TCP and Mount |
| CODE\_57A3 | Robot was not able to brake release, see log for details |  | Check Brake, solonoide, Payload, TCP and Mount |
| CODE\_58 | Motor encoder not calibrated |  | Callibrate joint |
| CODE\_59 | Overcurrent shutdown | Overcurrent in joint. Argument = Current in Amps. | Check for short circuit. Check program for singularity issues. Replace joint if necessary |
| CODE\_62 | Joint temperature |  |  |
| CODE\_62A1 | High (80 C) | Warning |  |
| CODE\_62A3 | Static load too high warning | Warning |  |
| CODE\_62A11 | Shut down (85 C) | Stop |  |
| CODE\_62A13 | Static load too high | Stop | Check Payload |
| CODE\_63 | Selftest failed |  |  |
| CODE\_68 | SPI error | Joint: Absolut encoder on joint communication error | Replace joint |
| CODE\_70 | Close to gearbox shear limit | Acceleration / deceleration to high. Mechanical problem in gear related to encoder mounting | Reduce acceleration in user program. Replace joint if necessary |
| CODE\_71 | Startup check error | Fault: Firmware in joint |  |
| CODE\_71A1 | Hardware is size1, software is not | Fault: Firmware in joint |  |
| CODE\_71A2 | Hardware is size2, software is not | Fault: Firmware in joint |  |
| CODE\_71A3 | Hardware is size3, software is not | Fault: Firmware in joint |  |
| CODE\_71A4 | Hardware is size4, software is not | Fault: Firmware in joint |  |
| CODE\_71A5 | Invalid hardware size read |  |  |
| CODE\_71A6 | Motor indication signal not working |  |  |
| CODE\_71A7 | Phase 1 and phase 2 not working | The motor wires are damaged, bad connection in screw terminals or defect PCB | Replace joint (Replace PCB) |
| CODE\_71A8 | Phase 2 not working | The motor wires are damaged, bad connection in screw terminals or defect PCB | Replace joint (Replace PCB) |
| CODE\_71A9 | Phase 1 not working | The motor wires are damaged, bad connection in screw terminals or defect PCB | Replace joint (Replace PCB) |
| CODE\_71A10 | Invalid motor test result |  |  |
| CODE\_71A11 | ADC calibration failed | Only in joint |  |
| CODE\_71A50 | Current sensor test failed | Sensor reported wrong current when probed | Replace the joint. Defect Printed circuit board |
| CODE\_71A51 | Current sensor test failed | Sensor reported wrong current when probed | Replace the joint. Defect Printed circuit board |
| CODE\_71A52 | Current sensor test failed | Sensors reported different currents when probed | Replace the joint. Defect Printed circuit board |
| CODE\_72 | Power Supply Unit failure | 48 V Power problem |  |
| CODE\_72A1 | 0 PSUs are active | PSU was not able to deliver 48V (In UR10: No 48V) | Check power connection between power supply and Safety Control Board |
| CODE\_72A2 | 1 PSU active, but we expect 2 (UR10) | PSU was not able to deliver 48V or UR10 flash card in UR5 robot | Check power connection between power supply and Safety Control Board and check that the flash card and robot match |
| CODE\_72A3 | 2 PSUs active, but we expect 1 (UR5) | UR5 flash card in UR10 robot | Check that the flash card and robot match |
| CODE\_73 | Brake test failed during selftest, check brakepin |  |  |
| CODE\_74 | Joint encoder warning | Magnetic encoder error (Absolut encoder) |  |
| CODE\_74A1 | Invalid decode: Readhead misalignment, ring damaged or external magnetic field present. | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A2 | Speed reading is not valid | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A4 | System error=malfunction or inconsistent calibration detected | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A8 | Supply voltage is out of range | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A16 | Temperature is out of range | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A64 | Signal low =Too far from magnetic ring | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A128 | Signal saturation =Too close to magnetic ring | Warning: The argument is the sum of C74 errors |  |
| CODE\_74A207 | Joint encoder error | Example: Argument 207 is the sum of 128,64,8,4,2,1 which means that all the errors in connection to argument 1, 2, 4, 8, 64 and 128 have been reported. | Example. |
| CODE\_75 | Joint encoder error | Magnetic encoder error (Absolut encoder) |  |
| CODE\_75A1 | Invalid decode: Readhead misalignment, ring damaged or external magnetic field present. | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_75A2 | Speed reading is not valid | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_75A4 | System error=malfunction or inconsistent calibration detected | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_74A8 | Supply voltage is out of range | Error: The argument is the sum of C75 errors | Check previous error |
| CODE\_74A16 | Temperature is out of range | Error: The argument is the sum of C75 errors | Check previous error |
| CODE\_75A32 | Signal lost =Misaligned readhead or damaged ring | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_75A64 | Signal low =Too far from magnetic ring | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_75A128 | Signal saturation =Too close to magnetic ring | Error: The argument is the sum of C75 errors | Replace joint |
| CODE\_75A207 | Joint encoder error | Example: Argument 207 is the sum of 128,64,8,4,2,1 which means that all the errors in connection to argument 1, 2, 4, 8, 64 and 128 have been reported. | Example |
| CODE\_76 | Joint encoder communication CRC error | Error between sensor and joint circuit | Check connections or very heavy electrical noise |
| CODE\_77 | Sudden position change detected on the joint-encoder | The position reading from the encoder was different than expected | ? |
| CODE\_78 | Large sudden position change detected on the joint-encoder | The position reading from the encoder was severely different than expected, the latest measurement was discarded | Contact your local service provider for assistance |
| CODE\_78A255 | Large sudden position change detected on the joint-encoder | The argument 255 is a number that relates to the size of the position change. In other words this can be treated as a C78 error. | Example. |
| CODE\_80A51 | Window watchdog reset |  |  |
| CODE\_100 | Robot changed mode | Status warning, general modus change | Check preceding errors in log history |
| CODE\_101 | Real Robot Connected |  |  |
| CODE\_102 | Real Robot not connected - Simulating Robot |  |  |
| CODE\_103 | UR Ethernet Error | Comm. Prob. between Mother Board and Safety Control Board | Check cable |
| CODE\_103A1 | Connection to Safety Control Board lost | PC did not receive 3 packets in a row | Check that the ethernet cable between PC board and Safety Control Board is connected and restart system |
| CODE\_103A2 | Package lost from Safety Control Board |  |  |
| CODE\_104 | Error=Empty command sent to robot |  |  |
| CODE\_111 | Something is pulling the robot |  | Check Payload setting |
| CODE\_115 | Unknown robot type | The robot type specified in the configuration is unknown |  |
| CODE\_116 | Realtime part warning | Possible CPU-overload due to structure of user program | Restructure user program |
| CODE\_117 | Restart SCB failed | The Safety Control Board couldn't be rebooted from the controller. | Reboot the robot |
| CODE\_150 | Protective Stop: Position close to joint limits |  |  |
| CODE\_151 | Protective Stop: Tool orientation close to limits |  |  |
| CODE\_152 | Protective Stop: Position close to safety plane limits |  |  |
| CODE\_153 | Protective Stop: Position deviates from path |  |  |
| CODE\_154 | Protective Stop: Position in singularity | Robot cannot move linear in a singularity | Use jointspace movement or change the motion |
| CODE\_155 | Protective Stop: Robot cannot maintain its position, check if payload is correct |  |  |
| CODE\_156 | Protective Stop: Wrong payload or mounting detected, or something is pushing the robot when entering Freedrive mode | The robot may move unexpected due to wrong settings | Verify that the TCP configuration and mounting in the used installation is correct |
| CODE\_160 | Protective stop: The robot was powered off last time due to a joint position disagreement | 1. Verify that the robot position in the 3D graphics matches the real robot, to ensure that the encoders function before releasing the brakes. Stand back and monitor the robot performing its first program cycle as expected.  2. If the position is not correct, the robot must be repaired. In this case, click “Power Off Robot”.  3. If the position is correct, please tick the check box below the 3D graphics and click “Robot Position Verified” |  |
| CODE\_161 | Protective stop: Large movement of the robot detected while it was powered off. The joints were moved while it was powered off, or the encoders do not function. | 1. Verify that the robot position in the 3D graphics matches the real robot, to ensure that the encoders function before releasing the brakes. Stand back and monitor the robot performing its first program cycle as expected.  2. If the position is not correct, the robot must be repaired. In this case, click “Power Off Robot”.  3. If the position is correct, please tick the check box below the 3D graphics and click “Robot Position Verified” |  |
| CODE\_171 | Issue with blends |  |  |
| CODE\_171A0 | A MoveC-waypoint were skipped due to a blend. | The value for the blend radius is too large compared to the distance between the waypoints. | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A1 | Blend radius too small in a MoveC |  |  |
| CODE\_171A3 | A ServoC-waypoint were skipped due to a blend. | The value for the blend radius is too large compared to the distance between the waypoints. | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A4 | Overlapping Blends in a MoveJ, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A5 | Overlapping Blends in a MoveJ, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A6 | Overlapping Blends in a MoveJ, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A7 | Overlapping Blends in a MoveJ, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A9 | A MoveP-waypoint were skipped due to a blend. | The value for the blend radius is too large compared to the distance between the waypoints. | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A10 | Blend radius too small error in a MoveP |  |  |
| CODE\_171A11 | Overlapping Blends in a MoveL, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A12 | Overlapping Blends in a MoveL, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A13 | Overlapping Blends in a MoveL, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
| CODE\_171A14 | Overlapping Blends in a MoveL, a waypoint was skipped |  | Decrease the blend radius or choose waypoints that are further apart. |
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| CODE\_172 | Illegal control mode |  |  |
| CODE\_184 | Joint self test not received by controller |  |  |
| CODE\_185A1 | START\_NORMAL\_OPERATION is not allowed on selftest firmware |  |  |
| CODE\_185A2 | GOTO\_BACKDRIVE\_COMMAND is not allowed on selftest firmware |  |  |
| CODE\_186A1 | joint\_mode == JOINT\_RUNNING\_MODE is not allowed on selftest firmware |  |  |
| CODE\_191 | Safety system violation |  |  |
| CODE\_191A1 | Joint position limit violated |  |  |
| CODE\_191A2 | Joint speed limit violated |  | Reduce acceleration or speed for joint |
| CODE\_191A3 | TCP speed limit violated |  | Reduce acceleration or speed for joint |
| CODE\_191A4 | TCP position limit violated |  |  |
| CODE\_191A5 | TCP orientation limit violated |  |  |
| CODE\_191A6 | Power limit violated |  | Reduce acceleration or speed for joint |
| CODE\_191A7 | Joint torque window violated |  |  |
| CODE\_191A8 | Joint torque window too large |  |  |
| CODE\_191A9 | Reduced mode output violation |  |  |
| CODE\_191A10 | Safeguard stop output violation |  |  |
| CODE\_191A11 | Emergency stop output violation |  |  |
| CODE\_191A12 | Momentum limit violation |  |  |
| CODE\_191A13 | Robot moving output violation |  |  |
| CODE\_191A14 | Robot is not braking in stop mode | During the braking process, the safety system monitors if the robots brakes as expected. If this is not the case, this error is generated | Check payload settings and mounting |
| CODE\_191A15 | Robot is moving in stop mode | When the robot is stopped due to a safety violation or a safeguard stop, the safety system generates this error, if the robot moves while in this mode | Is the robot physically pushed while safeguard stopped? |
| CODE\_191A16 | Robot did not stop in time |  |  |
| CODE\_191A17 | Received a null vector for TCP orientation | Fault in config file, when no GUI is used |  |
| CODE\_191A18 | Robot not stopping output violation |  |  |
| CODE\_191A19 | Invalid safety IO configuration | Fault in config file, when no GUI is used |  |
| CODE\_191A20 | Configuration information or limit sets not received |  |  |
| CODE\_191A21 | The other safety processor detected a violation |  |  |
| CODE\_191A22 | Received unknown command from Controller |  | Check Firmware |
| CODE\_191A23 | Invalid setup of safety limits |  | Check Firmware |
| CODE\_191A24 | Reduced Mode Output set, while it should not be |  | Check Firmware |
| CODE\_191A25 | Reduced Mode Output not set, while it should be |  | Check Firmware |
| CODE\_191A26 | Not Reduced Mode Output set, while it should not be |  | Check Firmware |
| CODE\_191A27 | Not Reduced Mode Output not set, while it should be |  | Check Firmware |
| CODE\_191A28 | Robot Emergency Stop exceeded maximum stop time | Too high payload |  |
| CODE\_191A29 | System Emergency Stop exceeded maximum stop time | Too high payload |  |
| CODE\_191A30 | Safeguard Stop exceeded maximum stop time | Too high payload |  |
| CODE\_191A31 | Operation mode switch is present while the three position switch is missing |  |  |
| CODE\_192 | Safety system fault |  |  |
| CODE\_192A1 | Robot still powered in emergency stop | When emergency stop is active, the robot arm powers off. The controller is responsible for sending the power off command. This error is generated, if the safety system detects that the robot arm still has power. |  |
| CODE\_192A2 | Robot emergency stop disagreement | E-stop in teach pendant or in Robot E-stop circuit problem | Check cables or replace Safety Control Board (SCB) |
| CODE\_192A3 | System emergency stop disagreement | System E-stop circuit problem | Check cables or replace Safety Control Board (SCB) |
| CODE\_192A4 | Safeguard stop disagreement | Safeguard circuit problem | Check cables or replace Safety Control Board (SCB) |
| CODE\_192A5 | Euromap safeguard stop disagreement | Euromap circuit problem | Check cables from Safety Control Board to Euromap to external machine |
| CODE\_192A6 | Joint position disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A7 | Joint speed disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A8 | Joint torque disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A9 | TCP speed disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A10 | TCP position disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A11 | TCP orientation disagreement |  | Reduce payload, check for encoder problems |
| CODE\_192A12 | Power disagreement | Power calculation: uP-A and uP-B disagreement | Joint error: Check previous error codes from the same joint and evaluate |
| CODE\_192A13 | Joint torque window disagreement |  |  |
| CODE\_192A14 | Reduced mode input disagreement | Safety I/O uP-A and uP-B disagreement | Check cables |
| CODE\_192A15 | Reduced mode output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A16 | Safety output failed |  |  |
| CODE\_192A17 | Safeguard stop output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A18 | The other safety processor is in fault |  |  |
| CODE\_192A19 | Emergency stop output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A20 | SPI output error detected | Safety Control Board | Check 24 V supply |
| CODE\_192A21 | Momentum disagreement |  |  |
| CODE\_192A22 | Robot moving output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A23 | Wrong processor ID |  |  |
| CODE\_192A24 | Wrong processor revision |  |  |
| CODE\_192A25 | Potential brownout detected | Voltage drop on Safety Control Board(SCB) or defect SCB |  |
| CODE\_192A26 | Emergency stop output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A27 | Safeguard stop output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A28 | Robot not stopping output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A29 | Safeguard reset input disagreement | Safety I/O uP-A and uP-B disagreement | Check cables |
| CODE\_192A30 | Safety processor booted up in fault mode |  |  |
| CODE\_192A31 | Reduced Mode Output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A32 | Not Reduced Mode Output disagreement | Safety I/O uP-A and uP-B disagreement | Check Cables and Software error on motherboard |
| CODE\_192A33 | Checksum disagreement between uA and uB |  |  |
| CODE\_192A34 | User safety config checksum disagreement between uA and GUI |  |  |
| CODE\_192A35 | Robot config checksum disagreement between uA and GUI |  |  |
| CODE\_192A36 | Online RAM test failed |  |  |
| CODE\_192A37 | Not all safety related functionalities are running |  |  |
| CODE\_192A38 | Package too short for CRC calculation |  |  |
| CODE\_192A39 | Three position switch input disagreement |  |  |
| CODE\_192A40 | Operation mode switch input disagreement |  |  |
| CODE\_193 | One of the nodes is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A0 | Joint 0 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A1 | Joint 1 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A2 | Joint 2 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A3 | Joint 3 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A4 | Joint 4 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A5 | Joint 5 is in fault mode | SCB has detected an error | See previous error or update the firmware on the joint or reboot system |
| CODE\_193A6 | Tool is in fault mode | SCB has detected an error | See previous error or reboot system |
| CODE\_193A7 | Screen 1 is in fault mode | SCB has detected an error | See previous error or reboot system |
| CODE\_193A8 | Screen 2 is in fault mode | SCB has detected an error | See previous error or reboot system |
| CODE\_193A9 | Euromap 1 is in fault mode | SCB has detected an error | See previous error or reboot system |
| CODE\_193A10 | Euromap 2 is in fault mode | SCB has detected an error | See previous error or reboot system |
| CODE\_194 | One of the nodes is not booted or not present |  |  |
| CODE\_194A0 | Joint 0 is not booted or not present | SCB has detected an error |  |
| CODE\_194A1 | Joint 1 is not booted or not present | SCB has detected an error |  |
| CODE\_194A2 | Joint 2 is not booted or not present | SCB has detected an error |  |
| CODE\_194A3 | Joint 3 is not booted or not present | SCB has detected an error |  |
| CODE\_194A4 | Joint 4 is not booted or not present | SCB has detected an error |  |
| CODE\_194A5 | Joint 5 is not booted or not present | SCB has detected an error |  |
| CODE\_194A6 | Tool is not booted or not present | SCB has detected an error |  |
| CODE\_194A7 | Screen 1 is not booted or not present | SCB has detected an error |  |
| CODE\_194A8 | Screen 2 is not booted or not present | SCB has detected an error |  |
| CODE\_194A9 | Euromap 1 is not booted or not present | SCB has detected an error |  |
| CODE\_194A10 | Euromap 2 is not booted or not present | SCB has detected an error |  |
| CODE\_194A128 | Joint 0 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace base |
| CODE\_194A129 | Joint 1 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace shoulder |
| CODE\_194A130 | Joint 2 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace elbow |
| CODE\_194A131 | Joint 3 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace Wrist 1 |
| CODE\_194A132 | Joint 4 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace Wrist 2 |
| CODE\_194A133 | Joint 5 not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace Wrist 3 |
| CODE\_194A134 | Tool not ready while brake release requested | Must be at least in IDLE mode when the brake release is requested | 1. Check for loose communication cable. 2. replace Tool |
| CODE\_195 | Conveyor speed too high | Conveyor speed higher than robot is able to run | Make sure that conveyor tracking is set correct up |
| CODE\_195A1 | Conveyor speed too high for joint speed safety limit |  | Make sure that conveyor tracking is set correct up |
| CODE\_195A2 | Conveyor speed too high for TCP speed safety limit |  | Make sure that conveyor tracking is set correct up |
| CODE\_195A3 | Conveyor speed too high for momentum safety limit |  | Make sure that conveyor tracking is set correct up |
| CODE\_196 | MoveP speed too high | Too high speed in relation to blend radius | Reduce speed or increase blend radius in user program |
| CODE\_197 | Blend overlap warning |  |  |
| CODE\_200 | Safety Control Board hardware error | SCB: uP-A has detected an error |  |
| CODE\_200A1 | Hardware ID is wrong | SCB: uP-A has detected an error: Wrong SCB |  |
| CODE\_200A2 | MCU type is wrong | SCB: uP-A has detected an error |  |
| CODE\_200A3 | Part ID is wrong | SCB: uP-A has detected an error |  |
| CODE\_200A4 | RAM test failed | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A5 | Register test failed | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A6 | pRom Crc test failed | SCB: uP-A has detected an error: firmware error | Replace Safety Control Board (SCB) |
| CODE\_200A7 | Watchdog reset the processor | SCB: uP-A has detected an error |  |
| CODE\_200A8 | OVG signal test not passed | SCB: uP-A has detected an error: over voltage generator | Replace Safety Control Board (SCB) |
| CODE\_200A9 | 3V3A power good pin is low | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A10 | 3V3B power good pin is low | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A11 | 5V power good is low | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A12 | 3V3 voltage too low | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A13 | 3v3 voltage too high | SCB: uP-A has detected an error | Replace Safety Control Board (SCB) |
| CODE\_200A14 | 48V input is too low |  | Check: 48 V power supply, current distributer energy eater or replace SCB |
| CODE\_200A15 | 48V input is too high |  | Check: 48 V power supply, current distributer energy eater or replace SCB |
| CODE\_200A16 | 24V IO short circuited | Too high current | Disconnect external connections |
| CODE\_200A17 | PC current is too high | Motherboard takes too high current |  |
| CODE\_200A18 | Robot voltage is too low |  | Check: Short circuit in robot arm, 48 V power supply, current distributer energy eater or replace SCB |
| CODE\_200A19 | Robot voltage is too high |  | Check: 48 V power supply, current distributer energy eater or replace SCB |
| CODE\_200A20 | 24V IO voltage is too low |  | Disconnect I/O or replace SCB |
| CODE\_200A21 | 12V voltage is too high |  | Check 12 V power supply, cables or replace SCB |
| CODE\_200A22 | 12V voltage is too low |  | Check 12 V power supply, cables or replace SCB |
| CODE\_200A23 | It took too long to stabilize 24V | Safety Control Board error(SCB) | External 24 V problem or replace SCB |
| CODE\_200A24 | It took too long to stabilize 24V IO | Safety Control Board error(SCB) | External 24 V problem or replace SCB |
| CODE\_200A25 | 24V voltage is too high | Safety Control Board error(SCB) | Replace Safety Control Board (SCB) |
| CODE\_200A26 | 24V IO voltage is too high |  | Disconnect I/O or replace SCB |
| CODE\_201 | Setup of safety board failed | Invalid safety parameters have been received | Verify that the setup of the Safety Configuration is valid. Check the Ethernet connection between Motherboard and Safety Control Board. |
| CODE\_202 | SCE configuration was illegal, after applying tolerances |  |  |
| CODE\_203 | PolyScope detected a mismatch between the shown and (to be) applied safety parameters | The PolyScope continuously verifies that the shown safety parameters are equal to the running parameters | Reload the installation |
| CODE\_204 | Protective Stop: Invalid setpoint |  |  |
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| CODE\_204A1 | Sudden change in target position |  |  |
| CODE\_204A2 | Inconsistency between target position and speed |  |  |
| CODE\_204A3 | Sudden stop | The program contains motions that are not ramped correctly down | To abort a motion, use \stopj\" or \"stopl\" script commands to generate a smooth deceleration." |
| CODE\_204A4 | Robot is not braking in stop or pause mode |  | If this happens, report it as a bug |
| CODE\_204A5 | Robot program resulted in invalid setpoint |  |  |
| CODE\_204A6 | Blending failed and resulted in an invalid setpoint |  | Try changing the blend radius or contact technical support |
| CODE\_205 | Target speed does not match target position |  |  |
| CODE\_205A0 | Inconsistency between target position and speed |  |  |
| CODE\_206 | Sanity check failed |  | The software version on the robot must be the same or later than the version the robot had from the factory. |
| CODE\_206A0 | Target joint speed does not match target joint position - Joint 0 (Base) |  |  |
| CODE\_206A1 | Target joint speed does not match target joint position - Joint 1 (Shoulder) |  |  |
| CODE\_206A2 | Target joint speed does not match target joint position - Joint 2 (Elbow) |  |  |
| CODE\_206A3 | Target joint speed does not match target joint position - Joint 3 (Wrist 1) |  |  |
| CODE\_206A4 | Target joint speed does not match target joint position - Joint 4 (Wrist 2) |  |  |
| CODE\_206A5 | Target joint speed does not match target joint position - Joint 5 (Wrist 3) |  |  |
| CODE\_207 | Fieldbus input disconnected |  | Check fieldbus connections or disable the fieldbus in the installation |
|  |  |  |  |

## LED indicators on Safety Control Board

**Safety Control Board (SCB)**



* 12V-PSU On when the power plug is connected.
* 12V System: On when the power on has been activated
* 5V On when “12 V System” is on and indicate that 5 V is ok.
* -4V On when “12 V System” is on and indicate that - 4 V to analog I/O is ok.
* 3V3A On when 5V is on and indicate 3.3 V for logic Safety circuit A
* 3V3B On when 5V is on and indicate 3.3 V for logic Safety circuit B
* 48V 48 V is present on the safety control board
* 24V 48 V is detected and ok, indicate that internal 24 V is present for I/O’s
* R 48 V on robot arm
* A Status for Logic A: a blink sequence
* B Status for Logic B: a blink sequence

## 5.3 Error phenomena

### 5.3.1 ControlBox: NO CONTROLLER displayed in Initializing

ControlBox = NO CONTROLLER displayed at INITIALIZING screen

Defective Safety Control Board

Replace Safety Control Board and verify problem is solved

Replace ethernet cable between motherboard and Safety Control Board and verify problem is solved

Replace motherboard and verify problem is solved

Defective motherboard

YES

YES

NO

NO

Defective ethernet cable

YES

### 5.3.2 NO CABLE displayed during power up

NO CABLE displayed during power up > controller shuts off after few seconds

Replace 12V power supply

Check that 12V PSU LED is lid. The top LED in the row in the right side of the Safety Control Board

Measure that 230V AC is present on power input connector on 12V power supply

During power up (within first few seconds) check that the 48 V LED and R LED are lid before they turns off again. The no. 3 and no 5 LED from the bottom on the Safety Control Board.

Replace Safety Control Board

Replace motherboard

NO

NO

YES

YES

YES

Replace current distributor

NO

### 5.3.3 Force limit protective stop

Force Limit Protective Stop

Is center of mass very different from tcp point?

Payload and tcp settings in Installation\TCP Configuration must correspond with actual tool.

Are settings incorrect?

Are waypoints positioned very close to cylindrical area around base of robot where robot can not operate?

Adjust waypoints away from this area or reduce speed/acceleration

YES

NO

Adjust payload and tcp settings

YES

Adjust center of mass using script code set\_payload()

YES

NO

Is robot moving with excessive speed or accelerating very hard?

Reduce speed or acceleration

YES

NO

Press free drive button on back of TP and check the free drive function of all joints > any abnormal friction or behavior observed?

NO

Inspect joint with abnormal behavior, joint might have mechanical failure

YES

Contact distributor from where robot has been purchased

NO

### 5.3.4 Power on failure in Initializing

If power turns off a few seconds after Robot Power is turned On in the Initializing window, there are many possible causes for this phenomenon.

Most likely it is a control box failure or a communication failure with a joint or the tool.

Control box failure

Replace 48V power supply

During power up (within the first three seconds of power up) measure that 230V AC is present on 48V\_PSU1 connector on current distributor PCB

Power controller OFF/ON

Measure that 12V DC is present in the red connector/flatcable on the current distributor

Replace current distributor

Check log history for error messages and consult the section Error Codes for detailed explanation

Replace Safety Control Board

YES

YES

NO

NO

Communication failure with a joint or the tool connector

Go to tab POWER ON/OFF and press TURN POWER ON. Does state of tool switch from BROKEN COMM. ERROR to READY?

Go to LOW LEVEL CONTROL in EXPERT MODE (consult chapter 4.2 for how to access EXPERT MODE)

Does state of tool switch to READY?

Replace tool

Check log history for error messages and consult the section Error Codes for detailed explanation

NO

YES

Unmount tool and check black comm. connector is fully inserted in pcb

YES

NO

Continue to next page

Go to tab POWER ON/OFF and press TURN POWER ON. Does state of all joints J0-J5 switch from BROKEN COMM. ERROR to READY?

Does state of joint switch to READY?

Replace joint

NO

YES

YES

Remove blue lid of joint and check black comm. connector is fully inserted

Continued

NO

Communication ok to joints and tool

### 5.3.5 Checklist after a collision

Checklist after a collision

Remove lid and inspect parts inside of joint

Visually inspect robot arm.

Are any parts visually damaged, like damages on one of the blue lids?

Stop robot program and eventually press the Emergency button prior to entering the work cell

Press free drive button on back of TP and check the free drive function of all joints > any abnormal friction or behavior observed?

Inspect joint with abnormal behavior

Check log history for error messages and consult the section Error Codes for detailed explanation

YES

YES

NO

NO

Press free drive button on back of TP and check the free drive function of all joints > any excessive noise observed?

YES

NO

Inspect joint with abnormal noise. If click noises appear, check brake pin

Start the robot program in reduced speed and verify robot is running as intended

NO