

# TwinCAT Library: Errors and other Messages

## Application Note AN103

Version	Date	Editor	Comment
001	2013-01-25	mvx	Copy from Event file and add descriptions and solutions
002	2013-05-22	mvx	Add comment on bridge voltage error and new errors for firmware 1040
003	2014-10-20	dg	Add Reference by Tama information messages 187, 188, 189 (SVN671)
005	2016-01-19	dg	Messages added used for homing with TSD80 (191,...193)
006	2016-03-14	mvx	New messages for digital endat encoders. (302..305) (TSD80)
007	2017-09-05	mvx	New messages (306..309) for (FW1048 and 1049) (TC2: 305.6 / TC3: 371.7)
008	2018-06-30	dg	Changed 309 to Warning and added 310 as alarm.
009	2019-04-29	mvx	New errors 311-316
010	2020-01-27	dg	New error 317

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## 1 Target and Purpose

The Triamec TwinCat library generates errors, warnings and messages, which are propagated to the user through the TwinCat Event mechanism. This application note describes all messages and suggests solutions.

## 2 Tria-Link Adapter Errors

The messages of Sourceld 700 are related to the Tria-Link in general or the Tria-Link adapter. The following list starts with the EventId and its class. The first parameter %1 is always the nDevId of the Tria-Link adapter, see alarm 066.

065	Class:Alarm	<b><i>Tria-Link Internal Error</i></b>
	Description	This is an internal error
	Solution	Send a bug report to Triamec Motion AG
066	Class:Alarm	<b><i>Tria-Link PCI Board not found</i></b>
	Description	The Tria-Link adapter board as specified by the input Trialink.Config.nDevId in the PLC code was not found in the TwinCat System manager.
	Solution	Make sure a Tria-Link PCI board is installed and found in the TwinCat System manager entry for device DPRAM with id=nDevId.
067	Class:Alarm	<b><i>Tria-Link PCI Board: FPGA Firmware ID must be 1041 or newer</i></b>
	Description	The Tria-Link PCI board firmware is outdated
	Solution	Upgrade to a recent firmware version using the TAM System Explorer
068	Class:Alarm	<b><i>Tria-Link PCI Adapter could not be accessed</i></b>
	Description	Internal local bus communication to the PCI adapter was not possible.
	Solution	Shutdown the PC for 20s and reboot, send bug report to Triamec Motion AG.
069	Class:Alarm	<b><i>Tria-Link not closed or FastCall missing</i></b>
	Description	The Tria-Link PCI adapter was found but detected an open Tria-Link ring.
	Solution	Make sure the ring is closed and all members have gotten 24V. Check cabling. Check if the fast task is missing.
070	Class:Alarm	<b><i>Sampling Rate of CallFast is too slow</i></b>
	Description	The sampling rate of the CallFast task in the PLC-Code must be faster or equal than 2ms.
	Solution	Adjust the sampling rate in the PLC code.
071	Class:Alarm	<b><i>Smart Sync out of bounds</i></b>
	Description	A very large mismatch between the adapter time base and the TwinCat time has been detected.
	Solution	Re-Boot the Tria-Link and send an error report to Triamec.
072	Class:Warning	<b><i>Sync Warning: Too small BufferTime or TwinCat Task Exceeded too much</i></b>
	Description	A mismatch has been detected between the adapter time base and the TwinCat time. This might be an indication of TwinCat task jitter or task Exceeds or a tight buffer time in <i>Trialink.FastHandler.pll.BufferTicks</i> .
	Solution	Make sure the TwinCat jitter is low and there are no Task Exceeds. Also make

sure, BufferTicks \* FastTaskTime is larger than TwinCat Jitter.

073	Class:Alarm Description Solution	<b><i>Tria-Link Boot Timeout</i></b> The Tria-Link should be booted but did not reach the end of booting. See solutions for error 069.
074	Class:Alarm Description Solution	<b><i>Tria-Link two masters in the ring</i></b> There are two Tria-Link masters in the ring. Make sure any second PCI board in the ring is configured as "Observer"
075	Class:Message Description Solution	<b><i>Tria-Link down</i></b> The Tria-Link has been turned off by the PLC code. Boot Tria-Link using Trialink.Execute.
076	Class:Message Description Solution	<b><i>Tria-Link booting</i></b> The Tria-Link is currently booting. Wait until booting has finished.
077	Class:Message Description Solution	<b><i>Trialink.Config.Rootfolder is not a valid folder path</i></b> The Tria-Link PLC configuration contains an invalid path. Modify PLC code
078	Class:Message Description Solution	<b><i>FB not supported for TLO400</i></b> Old adapter mode not supported for TLO400 (Application note AN134). Modify PLC code and use adapter mode Trialink2 instead of Trialink

### 3 Tria-Link Axis Errors

The messages of sourceId 701 to 708 are related to an axis or its servo drive with logical axis numbers iAxis 1 to 8 (sourceId = 700+iAxis). The parameter %1 is always the **logical axis ID** number.

128	Class:Alarm Description Solution	<b><i>Axis Internal Error</i></b> An internal error. Reboot Tria-Link and send a bug report to Triamec.
129	Class:Alarm Description Solution	<b><i>Axis Power RLID not supported</i></b> The servo drive found at the specified station address is not compatible. Is there a second axis configuration in the PLC code that points to a single axis drive? Is the axis firmware compatible with the library version?
130	Class:Alarm Description Solution	<b><i>No communication with drive</i></b> The drive cannot be accessed through the Tria-Link. Check cabling, check if drive has been made persistent with the correct station address and 24V rebooted ones since.
133	Class:Alarm Description Solution	<b><i>PublishAndSubscribe error</i></b> Same as Alarm 130. Check usage of TL_PublishAndSubscribe with correct station numbers.
134	Class:Alarm Description	<b><i>Axis Power Enable but missing communication</i></b> The drive stopped communicating.

	Solution	Reboot Tria-Link or reboot 24V and send a bug report to Triamec.
137	Class:Alarm Description	<b>Axis Power Enable Failed</b> Same as Alarm 130.
140	Class:Warning Description Solution	<b>Axis Power Enable while NotReadyToSwitchOn</b> The axis is not ready to be switched on but PLC code tries to enable Make sure any error is cleared and no axis warnings are active.
141	Class:Warning Description Solution	<b>Axis Move Absolute with commanded velocity zero and not discardVelocity</b> A move absolute was commanded with input velocity zero and the input discardVelocity was FALSE. This command was ignored. Check parameters of the function block TL_MoveAbsolute.
143	Class:Alarm Description	<b>Axis Power Enable but no communication</b> Same as Alarm 130.
145	Class:Alarm Description	<b>Axis Power GetBrakeConfig failed</b> Same as Alarm 130.
147	Class:Alarm Description Solution	<b>Publish Buffer Full or Abold counter overrun</b> Attempt to acquire too much publish ressources Check usage of TL_PublishAndSubscribe in the PLC code.
148	Class:Alarm Description	<b>Axis set brake writeregister failed</b> Same as Alarm 130
149	Class:Alarm Description Solution	<b>Bad Axis Configuration: bad station or iAxis</b> The PLC code configuration parameters "station" or "iAxis" are illegal. Correct PLC code
150	Class:Alarm Description	<b>Axis MoveAbs/MoveVel/MoveCond commandSend failed</b> Same as Alarm 130.
151	Class:Alarm Description Solution	<b>Axis MoveAbs/MoveVel Axis not ready for move</b> A MoveAbsolute or MoveVelocity was commanded but the axis was not ready to move. Make sure the axis is enabled and is not in an error state.
152	Class:Warning Description Solution	<b>Axis MoveAbs/MoveVel command aborted</b> A MoveAbsolute or MoveVelocity command was started but ended before reaching the final state (standstill or ContinuousMotion). Check, if an axis error or a TAMA program or another move command has interrupted the command
153	Class:Alarm Description Solution	<b>Axis MoveCondition MaximumDistance reached</b> A moveToCondition command has reached the maximum travel distance without finding the marker or index. For example in a reference move. Check if the marker or index is connected and shows up at the servo drive IO.
154	Class:Alarm	<b>MC_SetPosition failed</b>

	Description	It was not possible to stop the axis before setPosition or setPosition communication failed.
	Solution	Check if an emergency stop was active.
158	Class:Alarm	<b>Axis Endat failed</b>
	Description	Failed to read the endat Position.
	Solution	Make sure the encoder supports endat 2.1
170	Class:Alarm	<b>MC_Stop failed</b>
	Description	Same as Alarm 130.
171	Class:Alarm	<b>MC_Reset failed</b>
	Description	Same as Alarm 130.
178	Class:Message	<b>MC_MoveSync waiting for synchronization</b>
	Description	The axis should couple to the external path planner (NC) and is waiting for PLL synchronization.
	Solution	This should disappear as soon as the PLL has settled, 10s after booting Trialink.
179	Class:Alarm	<b>MC_MoveSync synchronization lost</b>
	Description	The synchronization of the PLL was lost while following the external path planner (NC). This might cause irregular commanded drive positions.
	Solution	Check for workpiece irregularities and find what caused irregular calls of the position task, e.g., check for illegal drivers.
180	Class:Alarm	<b>MC_MoveSync, logical axis ID not valid</b>
	Description	The logical axis ID <i>iAxis</i> must be between 1 and 32=TL_CH_AX_MAX.
	Solution	change configuration settings in the PLC code.
181	Class:Alarm	<b>MoveSync AboSubscribe failed</b>
	Description	Abo subscription failed. There might be too many subscriptions active.
	Solution	Correct PLC code.
182	Class:Alarm	<b>MoveSync MoveToStart failed</b>
	Description	The initial move before entering couple mode failed.
	Solution	Check if the dynamic settings of the axis are too fast.
183	Class:Alarm	<b>MoveSync Coupling failed</b>
	Description	Entering coupled mode failed
	Solution	Make sure, the commanded position of the NC/CNC is the same as the actual position of the drive in the very moment, the coupling command is issued (axis tracking).
184	Class:Alarm	<b>MoveSync SetPosition failed</b>
	Description	For unknown reasons, the SetPosition command within coupling failed.
	Solution	This is a special configuration. Please consult Triamec.
185	Class:Message	<b>Searching Switch</b>
	Description	The axis is currently searching for an IO, e.g., an end marker switch or a measurement tool signal.

186	Class:Message Description	<b>Searching Index</b> The axis is currently searching for an encoder index.
187	Class:Alarm Description Solution	<b>Tama Programm used for homing is not running</b> The asynchronous TAMA VM has to be enabled. Load the appropriate tama program used for homing and enable 'start asynchronous Tama virtual machine' in the start up settings (Tam System Explorer).
188	Class:Alarm Description Solution	<b>Tama VM used for homing is not ready</b> To start the homing sequence, the Tama state has to be IDLE. Check if the correct Tama program is loaded and if the Tama VM is enabled.
189	Class:Alarm Description Solution	<b>Tama homing error</b> The Tama VM used for homing is in error state. Check if the Tama program and verify if the precondition to run the homing sequence are fulfilled.
190	Class:Alarm Description	<b>TIOB bad logical axis ID</b> Same as 180
191	Class:Alarm Description Solution	<b>Homing method is not supported</b> The selected homing method is not supported by drive. For example because the selected position source is not available Select a homing method which is supported by the drive.
192	Class:Alarm Description	<b>Register layout is not supported</b> The register layout of the drive is not supported by the library.
193	Class:Alarm Description Solution	<b>Digital input is not supported</b> The selected digital input is not supported by the drive. Select a different digital input source.
261	Class:Warning Description Solution	<b>Bridge Voltage warning</b> The bridge voltage is not within the specified range in <i>General/Parameters/PowerBridgeVoltageUpperLimit</i> and <i>...LowerLimit</i> . Check, if the power supply is on.
262	Class:Message Description Solution	<b>SafeTorqueOff (STO) is active</b> The STO feature is active. The drive may currently not be enabled. Close the STO connector, e.g., the door. If this warning persists with bridged STO connector, an internal (safety) fuse might be blown.
264	Class:Alarm Description Solution	<b>PLL not locked</b> An unknown error has disturbed the PLL of the drive Clear the axis error and send a bug report to Triamec.
265	Class:Alarm Description Solution	<b>Computing time error</b> Something exceeded the drive controller calculation time. Check if a TAMA program is consuming too much calculation load.
266	Class:Alarm	<b>I2t Limit</b>

	Description	The I2t limit of the motor or drive has been reached
	Solution	Clear the axis error and reduce the dynamic settings of the path controller. Check the parameter <i>Environment/MotorNominalCurrent</i> .
267	Class:Alarm	<b>Current Limit Motor or Drive</b>
	Description	The limit of the current vector is succeeded (motor or drive).
	Solution	Same as Alarm 266 but check the parameter <i>Environment/MotorPeakCurrent</i>
268	Class:Alarm	<b>Bridge Voltage error</b>
	Description	Same as Warning 261, but because it was enabled before, this was considered an error. This error may also show up, if the application tries to enable an axis before the power supply reached its stable voltage during startup or before its internal inrush-current-relay turned on.
	Solution	Clear the axis error, check if the power supply is on.
269	Class:Alarm	<b>Bridge Overcurrent or Midvoltage out of range</b>
	Description	This can be one of two errors: Either the limit of the power bridge current is succeeded. This is a hard limit to prevent damage in a short situation. Or the midvoltage controller of a TSP350/TSP700 detected a deviation from midvoltage.
	Solution	Make sure there is no short of the motor and in case of a TSP350/TSP700 check cabling of the DCBus.
270	Class:Alarm	<b>Temperature Limit</b>
	Description	A temperature sensor of the drive (motor or internal) has reached the limit
	Solution	Make sure there is enough cooling of the drive or the motor
271	Class:Alarm	<b>Voltage out of range</b>
	Description	At least one operating voltage is out of range
	Solution	Check if the encoder shorts its supply voltage. Otherwise the drive hardware might be damaged.
272	Class:Alarm	<b>External error</b>
	Description	A software error has been triggered
	Solution	This is application specific. Consider if a TAMA code feature triggers this error.
273	Class:Alarm	<b>No valid Tama Code</b>
	Description	The tama code in the servo drive is not valid
	Solution	Download and activate a valid tama code.
274	Class:Alarm	<b>PERSISTENT parameters are NOT compatible with running firmware</b>
	Description	This is a special firmware upgrade situation
	Solution	Reload configuration and make the drive persistent again
275	Class:Alarm	<b>While executing a Tama program, the program memory became full during heap allocation</b>
	Description	A TAMA program allocated too much heap.
	Solution	Check memory allocated using the command "new" in the C# code.
276	Class:Alarm	<b>While executing a Tama program, an attempt was made to divide by zero</b>
	Description	This is a TAMA application code problem



	Solution	Prevent division by zero
277	Class:Alarm	<b><i>While executing a Tama program, an object property was requested, but there was a null reference</i></b>
	Description	This is a TAMA application code problem.
	Solution	Prevent calling null reference
278	Class:Alarm	<b><i>While executing a Tama program, an array element index was outside the range of the array</i></b>
	Description	This is a TAMA application code problem
	Solution	Make sure index boundaries are maintained.
279	Class:Alarm	<b><i>While executing a Tama program, Tama program state was corrupted. This value is returned when an unknown operation code is encountered</i></b>
	Description	This is a TAMA specific problem.
	Solution	Send a bug report to Triamec.
280	Class:Alarm	<b><i>Position error limit</i></b>
	Description	The position following error has succeeded the maximum distance allowed.
	Solution	Make sure the axis is free to move and check the parameter <i>PositionController/PositionErrorLimit</i> .
281	Class:Alarm	<b><i>id error limit</i></b>
	Description	<b><i>Same as Alarm 283, replaced by 283 since lib 330.0</i></b>
	Solution	<b><i>Same as Alarm 283</i></b>
282	Class:Alarm	<b><i>Same as Alarm 283, replaced by 283 since lib 330.0</i></b>
	Description	Same as Alarm 283
283	Class:Alarm	<b><i>id or iq error limit</i></b>
	Description	The current vector exceeded too much from the commanded current.
	Solution	<b><i>Make sure, the path planner does not command too fast accelerations or jerks. Check the parameter CurrentController/CurrentErrorLimit.</i></b>
284	Class:Alarm	<b><i>enable no motor axis</i></b>
	Description	The servo drive configuration does not contain a motor type definition
	Solution	Make sure, there is a valid Triamec configuration on the drive
285	Class:Alarm	<b><i>Analog Encoder Amplitude too low</i></b>
	Description	The analog encoder amplitude ( $\sin^2 + \cos^2$ ) was too low. This is an indication that the encoder is not connected, or one of the signal lines is damaged.
	Solution	Repair the encoder
286	Class:Alarm	<b><i>Encoder Shorted</i></b>
	Description	The power supply of the encoder is shorted.
	Solution	Repair the encoder or its cable.
287	Class:Alarm	<b><i>Digital Output Shorted</i></b>
	Description	A digital output is shorted.
	Solution	Repair the device attached to the digital output or its cable.



288	Class:Alarm Description Solution	<b>Motor Continuous Current Limit</b> The continuous current limit (I <sub>2t</sub> ) of the motor was reached. Reduce the current or the dynamic settings of the path planner.
289	Class:Alarm Description Solution	<b>Power Bridge Continuous Current Limit</b> The continuous limit of the power bridge was reached. Reduce the current or the dynamic settings of the path planner.
290	Class:Alarm Description Solution	<b>Hardware monitor on the device is not running</b> This is an internal error Reboot 24V and send a bug report to Triamec
293	Class:Alarm Description Solution	<b>SafeTorqueOff (STO) error</b> The STO state was detected while the drive was enabled. This causes an error Clear error. PLC code may disable the axis before entering STO mode.
294	Class:Alarm Description Solution	<b>SafeTorqueOff (STO) is inconsistent (only one contact is closed)</b> The STO state was entered, but only one channel (one pair of contacts) where opened. This is illegal. Make sure STO always opens both channels.
295	Class:Alarm Description Solution	<b>SafeTorqueOff (STO) The startup test of the safety circuit failed</b> The boot test of the safety circuit failed. The drive needs to be repaired.
296	Class:Alarm Description Solution	<b>SafeTorqueOff (STO) Pulse test failure</b> The internal pulse test of the STO channels failed. The drive needs to be repaired.
297	Class:Alarm Description Solution	<b>SafeTorqueOff (STO) Temperature limit</b> The STO circuit detected a temperature failure and entered the safe state. Make sure temperatures are within the limits and reset the error.
298	Class:Alarm Description Solution	<b>Motor Peak Current Limit</b> The current of a motor phase reached the peak limit of the motor. Reduce the peak currents or the dynamic settings of the path planner.
299	Class:Alarm Description Solution	<b>Power Bridge Peak Current Limit</b> The current of a motor phase reached the peak limit of the power bridge. Same as for 298.
300	Class:Alarm Description Solution	<b>Encoder Configuration Error</b> The encoder parameters are inconsistent. Check the encoder settings.
301	Class:Alarm Description Solution	<b>Option Module Failure</b> An option module has been configured but is either missing or not functional. Contact Triamec after verifying that the option module is installed.
302	Class:Alarm Description	<b>Encoder Databus Error</b> Digital Encoder data bus is not connected, or communication failed.

	Solution	Possible cause: faulty wiring, see AN107.
303	Class:Alarm Description Solution	<b>Encoder Not supported</b> This encoder type is not supported. Verify with Triamec if the drive supports your version of a (digital) encoder.
304	Class:Alarm Description Solution	<b>No Digital Encoder Persistency</b> The encoder does not contain persistency data. Find the reference and save persistency as described in AN107.
305	Class:Alarm Description Solution	<b>Encoder Subresolution Error</b> The sub-resolution of the encoder is ambiguous. Possible cause: faulty wiring, see AN107.
306	Class:Alarm Description  Solution	<b>Phase Short Error</b> The drive detected a short between the motor phases or between a phase and earth during enabling the axis. Test Motor wiring.
307	Class:Alarm Description Solution	<b>Synchronization Lost</b> Lost the synchronization between TwinCAT and the drive. Check Tria-Link cabling and TwinCAT timing.
308	Class:Alarm Description Solution	<b>Mid Voltage out of Range</b> The center voltage of this three level drive is out of specification. Check motor shortage against earth or call Triamec Motion AG.
309	Class:Warning Description Solution	<b>Power lines not ok</b> The power line voltages are out of specification. Measure the power line voltages.
310	Class:Alarm Description Solution	<b>Power lines not ok</b> The power line voltages are out of specification. Measure the power line voltages.
311	Class:Alarm Description  Solution	<b>Gantry Tracking Error</b> The distance between the two gantry axes was larger than the GantryDeviationLimit. Check the homing positions of both axes.
312	Class:Alarm Description Solution	<b>Commutation 600Hz Limit</b> The 600Hz commutation frequency limit of this product was reached. Measure the commutation velocity.
313	Class:Alarm Description Solution	<b>Unspecified Position Unit</b> The position unit is not specified or not known. Specify Parameter/PositionController.Units.
314	Class:Alarm Description Solution	<b>Motor Temperature Limit</b> The motor temperature limit was reached. Check the motor temperature sensor cabling.

315	Class:Alarm Description Solution	<b>Axis Parameter Error</b> A parameter of this axis is unknown. Check for unknown parameter enums in this firmware version.
316	Class:Alarm Description Solution	<b>Axis Command Error</b> A command of this axis is unknown. Check for unknown or illegal command enums.
317	Class:Alarm Description  Solution	<b>Disabling Error</b> Disabling of Axis failed. Transmit of command was not confirmed within time-out. Reboot Tria-Link and send a bug report to Triamec.
333	Class:Message Description Solution	<b>Homing: First search</b> This message informs about an ongoing homing in the first search state .
335	Class:Message Description Solution	<b>Homing: Relocation move</b> This message informs about an ongoing homing in the relocation move state .
344	Class:Message Description Solution	<b>Homing: Second search</b> This message informs about an ongoing homing in the second search state .
346	Class:Message Description Solution	<b>Homing: Move to home</b> This message informs about an ongoing homing in the move to home state .