DJ Series Control Signal Modules are used in this application.

Error handling information is provided in this manual. This information is necessary for proper operation of the product. This information should be used as a guide when programming the robot or PLC interfaces to the tool changer.

If further assistance is required, you may reach us at the contact information below. We will be glad to assist you.

How to Reach Us

Sales, Service and Information about ATI products:
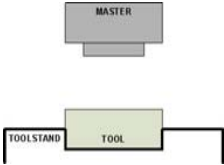
ATI Industrial Automation
1031 Goodworth Drive
Apex, NC 27539 USA
www.ati-ia.com
Tel: 919.772.0115
Fax: 919.772.8259
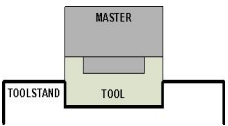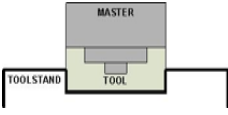E-mail: info@ati-ia.com

Technical support and questions:

Application Engineering
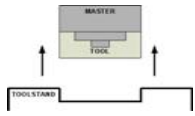Tel: 919.772.0115
Fax: 919.772.8259
E-mail: mech_support@ati-ia.com
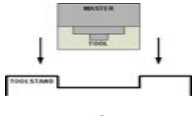
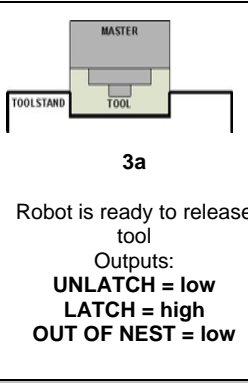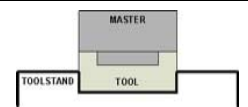| Robot Position/ Tool Changer Mode	Signals To Monitor	Potential Error Condition	Inhibit Robot Move-ment	Other Errors	Suggested Error Message	How To Recover	Reset With;
ANY POSITION (Continuous Monitoring Required)	AUX Power Available = high	low	see different robot positions		no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors"
	AUX Power Available = high	low	yes	Unlatch not completed	no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle UNLATCH output bit to clear "Unlatch not completed" error, Cycle "Clear Errors" bit
	LOCK = low	high	yes	Lock/Unlock sensor fault	Lock sensor is on, should be off	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks, check Lock sensor adjustment and cable connections	Cycle UNLATCH output bit to clear "Unlatch not completed" error
	UNLOCK = high	low	yes	Lock/Unlock sensor fault	TC Master not unlocked: Unlock sensor is off, should be on	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks, check Unlock sensor adjustment and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
	Tool Presence = low	high	yes		Tool Presence signal is high, should be low	check master pin block for debris, replace master module	
	Error on Unlatch output = low	high	yes	Unlatch not completed	Short circuit or overload on Unlatch solenoid output	check valve cable, check master pin block for debris, replace master module	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
	RTL/RTLV mismatch = low	high	yes	Unlatch not completed	DeviceNet power low or error on Master module	Check DeviceNet Power, replace master module	Cycle "Clear Errors" output bit
	TSIV/TSRV mismatch = low	high	yes	Unlatch not completed	TSI limit signals fault: TSIV/TSRV mismatch	check pin block on master module for debris	Cycle "Clear Errors" output bit
0 Robot arm in free air without tool at pounce position before picking up new tool Outputs: **UNLATCH = high LATCH = low OUT OF NEST = low**	Lock/Unlock sensor fault = low	high	yes		Lock sensor fault	check Lock and Unlock sensor adjustment and cable connections	
	Unlatch not completed = low	high	yes	all errors that disable Unlatch:	Tool changer is not unlocked	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks, check, Unlock sensor adjustment and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
	RTL fault = low	high	yes	Unlatch not completed	Error on RTL sensor (one of the RTL sensors is high but should be low)	check RTL sensor and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error

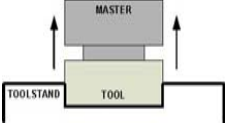| (Condition)							
1a TC master is moved into tool, pin blocks are connected, RTL sensors are in range, Robot is ready to pick up tool. Outputs: **UNLATCH = high** **LATCH = low** **OUT OF NEST = low**	AUX Power Available = high	low	no	Unlatch not completed	no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle UNLATCH output bit to clear "Unlatch not completed" error; Cycle "Clear Errors" bit
	RTL1, RTL2 =high	one or both low	yes		tool not positioned properly: RTLx input is low but should be high	check tool positioning, check RTL sensors and wiring	
	TSIV1, TSIV2 = high	one or both low	yes		TSI limit switch fault: TSIV is low but should be high	check limit switches and cables, check tool positioning	
	Tool Presence = high	low	yes	RTL fault, tool ID FFFF, Unlatch not completed	Tool is not positioned properly or not present	check tool positioning, manually override UNLOCK solenoid to check master/tool pin block	Cycle "Clear Errors" bit for RTL fault and "Unlatch not completed" error;
	Lock/Unlock Sensor Fault = low	high	yes		Lock sensor is on, should be off	check Lock and Unlock sensor adjustment and cable connections	
	Comm Error = low	high	no	tool ID FFFF	Communication error between Master and Tool module	check tool module status LEDs, check master and tool pin blocks	
	Error on Unlatch output = low	high	yes	Unlatch not completed	Short circuit or overload on Unlatch solenoid output	check valve cable, check valve module, check master pin block for debris, replace master module	Cycle "Clear Errors" output bit
	RTL/RTLV mismatch = low	high	yes	Unlatch not completed	DeviceNet power low or error on Master module	Check DeviceNet Power, replace master module	Cycle "Clear Errors" output bit
	TSIV/TSRV mismatch = low	high	yes	Unlatch not completed	TSI limit switch fault: TSIV/TSRV mismatch	check limit switches and cables, check master/tool pin blocks	Cycle "Clear Errors" output bit
	Unlatch not completed = low	high	yes		TC Master not unlocked: Unlock sensor is off, should be on	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
1b Robot has issued Latch command but robot arm has not moved yet Outputs: **UNLATCH = low** **LATCH = high** **OUT OF NEST = low**	AUX Power Available = high	low	no	Unlatch not completed	no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors" bit
	UNLOCK = low	high	yes	Lock/Unlock sensor fault	tool is not locked	check valve operation and cabling, check Unlock sensor adjustment and cable connections	
	LOCK = high	low	yes	"Latch not completed error" after 3 seconds	tool is not locked	check air supply, check valve operation and cabling, check, Lock sensor adjustment and cable connections, check for mechanical binding of locking mechanism, check for debris on tool changer interface	
	Lock/Unlock Sensor Fault = low	high	yes		Unlock sensor fault	check Lock and Unlock sensor adjustment and cable connections	

2a Robot arm in free air with tool at pounce position. Ready to use tool Outputs: **UNLATCH = low** **LATCH = high** **OUT OF NEST = high**	AUX Power Available = high	low	yes		no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors" bit
	RTL1, RTL2 =high	one or both low	yes		RTLx is low but should be high	check RTL sensors and cables, check air supply, check for gapping	
	UNLOCK = low	high	yes	Lock/Unlock sensor fault	Unlock sensor error: Unlock is high but should be low	check Lock/Unlock sensor adjustment and cable connections	
	LOCK = high	low	yes		tool is not completely locked: Lock sensor is low but should be high	check air supply, check for gapping, check Lock/Unlock sensor adjustment and cable, check piston for binding	
	TSIV1, TSV2 = low	one or both high	yes	TSIV fault	TSI limit switch fault	check limit switches and cables, check pin blocks	
	Tool Presence = high	low	no	tool ID FFFF, RTL fault	Tool Presence is low but should be high.	check master/tool pin block	
	RTL/RTLV mismatch = low	high	no, wait until tool is returned to tool stand, unlatch will be disabled	DeviceNet power low or error on Master module	Check DeviceNet Power, Cycle Clear Errors bit; if this does not help then unplug RTL sensors and cycle power (or manually override solenoid), then replace master module	Cycle "Clear Errors" bit
	TSIV/TSRV mismatch = low	high	yes		TSIV/TSRV mismatch error	check limit switches and cables, check pin blocks	Cycle "Clear Errors" bit
	Lock/Unlock Sensor Fault = low	high	yes		Unlock sensor error: Unlock is high but should be low	check Unlock sensor adjustment and cable connections	
	TSIV fault = low	high	yes		TSI limit switch fault: TSIVx is stuck high	check limit switches and cables, check pin blocks	Cycle "Clear Errors" bit
2b Robot arm in free air with tool at pounce position. Robot is ready to place tool back into tool stand Outputs: **UNLATCH = low** **LATCH = high** **OUT OF NEST = low**	AUX Power Available = high	low	yes		no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors" bit
	RTL1, RTL2 =high	one or both low	yes		RTLx is low but should be high	check RTL sensors and cables, check air supply, check for gapping	

3a Robot is ready to release tool Outputs: **UNLATCH = low** **LATCH = high** **OUT OF NEST = low**	AUX Power Available = high	low	yes		no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors" bit
	TSIV1, TSV2 = high	one or both low	yes	TSIV1/TSIV2 mismatch if only one low	Tool is not properly positioned in tool stand: TSIVx is low but should be high	check tool positioning, check limit switches and cables, check pin blocks	
	RTL/RTLV mismatch = low	high	yes		DeviceNet power low or error on Master module	Check DeviceNet Power, Cycle Clear Errors bit; if this does not help then unplug RTL sensors and cycle power (or manually override solenoid), then replace master module	Cycle "Clear Errors" bit
	TSIV/TSRV mismatch = low	high	yes		TSIV/TSRV mismatch error	check limit switches and cables, check pin blocks	Cycle "Clear Errors" bit
	AUX Power Available = high	low	yes	Unlatch not completed	warning: tool may not be completely unlocked: no or unstable AUX power	apply AUX power (min. 21.6V), make sure that AUX power does not drop below 21.6V at any time	Cycle "Clear Errors" bit
	UNLOCK = high	low	yes	Unlatch not completed	Warning: tool is not completely unlocked: Unlock is low but should be high	check air supply, check valve, check piston for binding, check Unlock sensor adjustment and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
	LOCK = low	high	yes	Lock/Unlock sensor fault	Warning: tool is not completely unlocked: Lock sensor is high but should be low	check air supply, check valve, check piston for binding, check Unlock sensor adjustment and cable connections	
	Tool Presence = high	low	yes	RTL Fault, Tool ID FFFF, Unlatch Not Completed	Warning: if process is continued, tool could be drug from stand. Tool Presence is low but should be high	Manually override UNLOCK solenoid to check master/tool pin block	Cycle "Clear Errors" bit for RTL Fault and "Unlatch Not Completed" error
	Unsafe Unlatch Command received = low	high	yes	Lock/Unlock sensor fault, TSIV1/TSIV2 mismatch or RTL1/RTL2 mismatch	warning: unsafe to unlatch - tool is not unlocked	check other error bits (TSIV1/TSIV2 mismatch, RTL1/RTL2 mismatch), make sure that all RTL and TSIV signals are high	correct error, cycle "Clear Errors" bit then cycle UNLATCH output bit
	TSIV1/TSIV2 mismatch = low	high	yes	Unlatch not completed, Unsafe Unlatch Command received	TSI limit switch fault: TSIVx is low but should be high	check tool positioning, check limit switches and cables	correct error, cycle "Clear Errors" bit then cycle UNLATCH output bit
	RTL1/RTL2 mismatch = low	high	yes	Unlatch not completed, Unsafe Unlatch Command received	RTL sensor fault: RTLx is low but should be high	check RTL sensors and cables, check air supply, check for gapping, check piston for binding	correct error, cycle "Clear Errors" bit then cycle UNLATCH output bit
	Unlatch not completed = low	high	yes	other errors that disable Unlatch	TC Master not unlocked: Unlock sensor is off, should be on	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error

3b Robot has unlatched the tool but robot arm has not moved yet Outputs: **UNLATCH = high** **LATCH = low** **OUT OF NEST = low**	Lock/Unlock Sensor Fault = low	high	yes			check valve operation and cabling, check master/tool pin blocks, check Unlock sensor adjustment and cable connections	
	Error on Unlatch output = low	high	yes	Unlatch not completed	Short circuit or overload on Unlatch solenoid output	check valve cable, check valve module, check master pin block for debris, replace master module	Cycle "Clear Errors" output bit
	RTL fault = low while tool is being removed from tool stand	high	yes - tool could not be unlock-ed *properly*	RTL1 or RTL2 could be low	RTL sensor fault (stuck high), warning: tool may not be completely unlocked	check RTL sensor and cable connections, check for gapping, check for parallel positioning	
	LOCK = low	high	yes	Lock/Unlock sensor fault	Lock sensor is on, should be off	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks, check Lock sensor adjustment and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error
transition from 3b - 0	UNLOCK = high	low	yes	Lock/Unlock sensor fault	TC Master not unlocked: Unlock sensor is off, should be on	check valve operation and cabling, possible overload (check "Error on Unlatch Output" bit), check master/tool pin blocks, check Unlock sensor adjustment and cable connections	Cycle UNLATCH output bit or Cycle "Clear Errors" bit to clear "Unlatch not completed" error