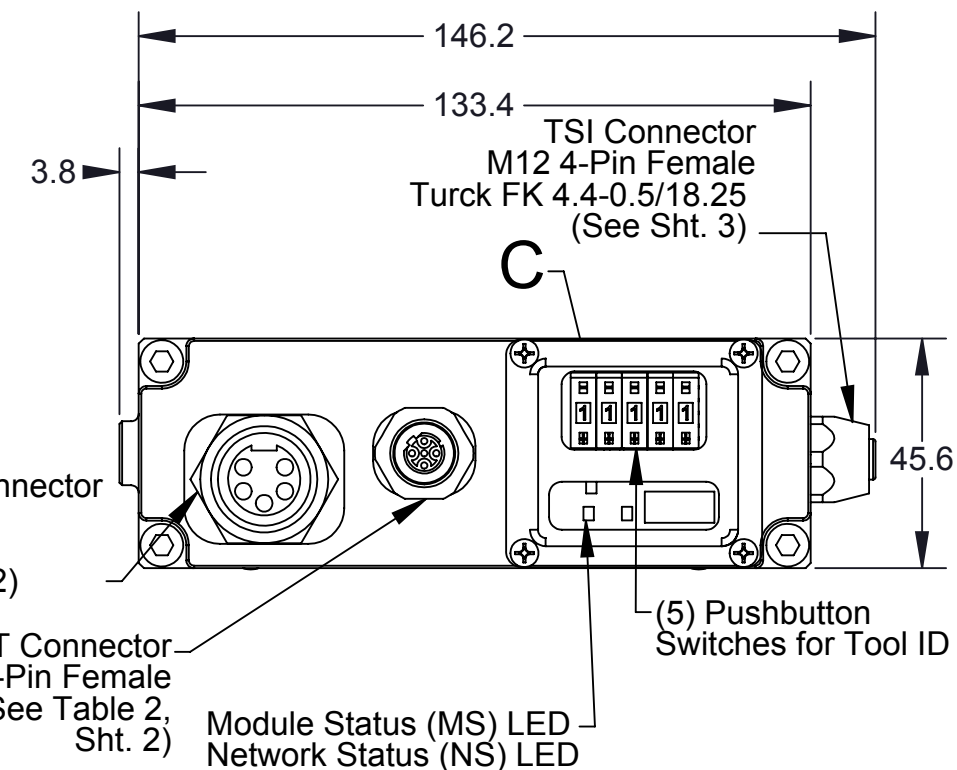
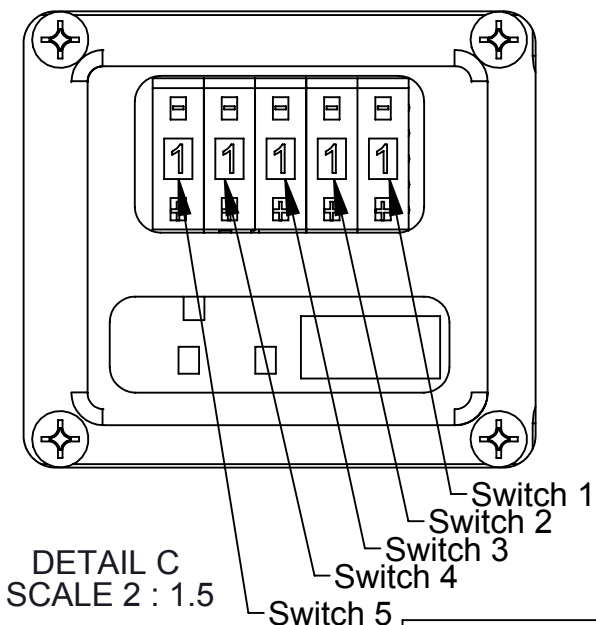
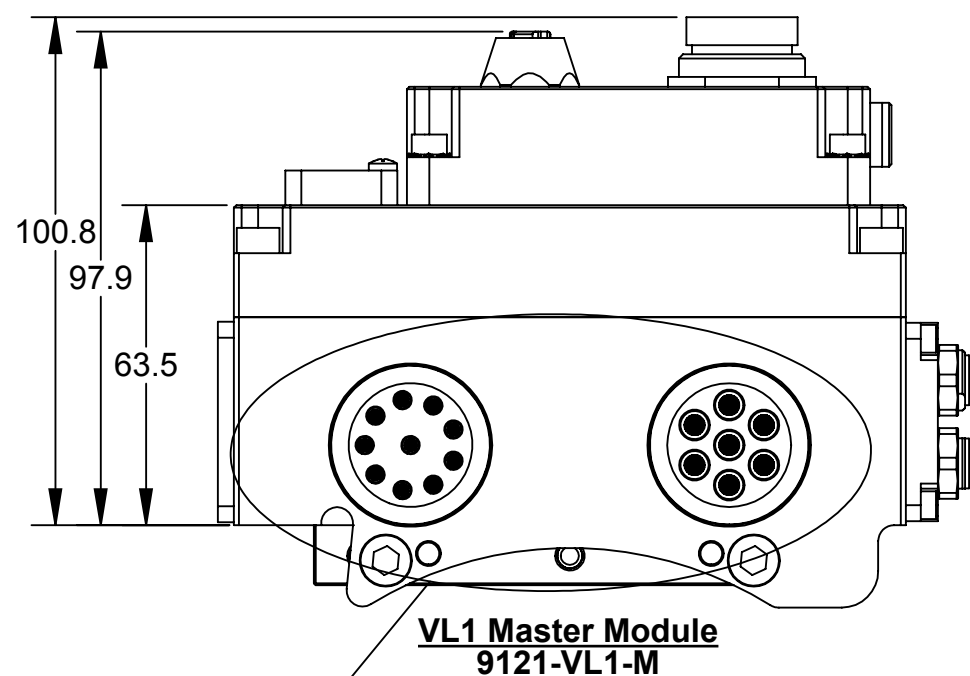
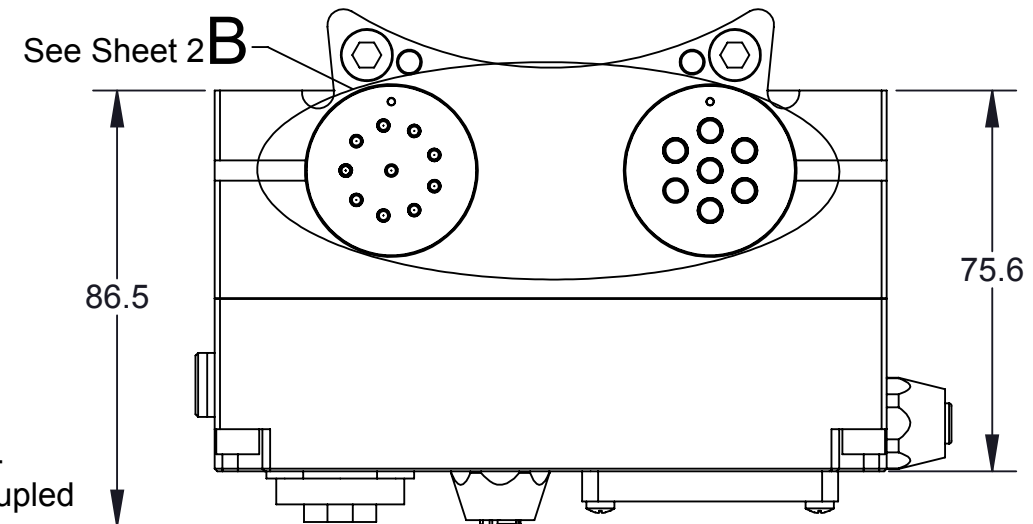
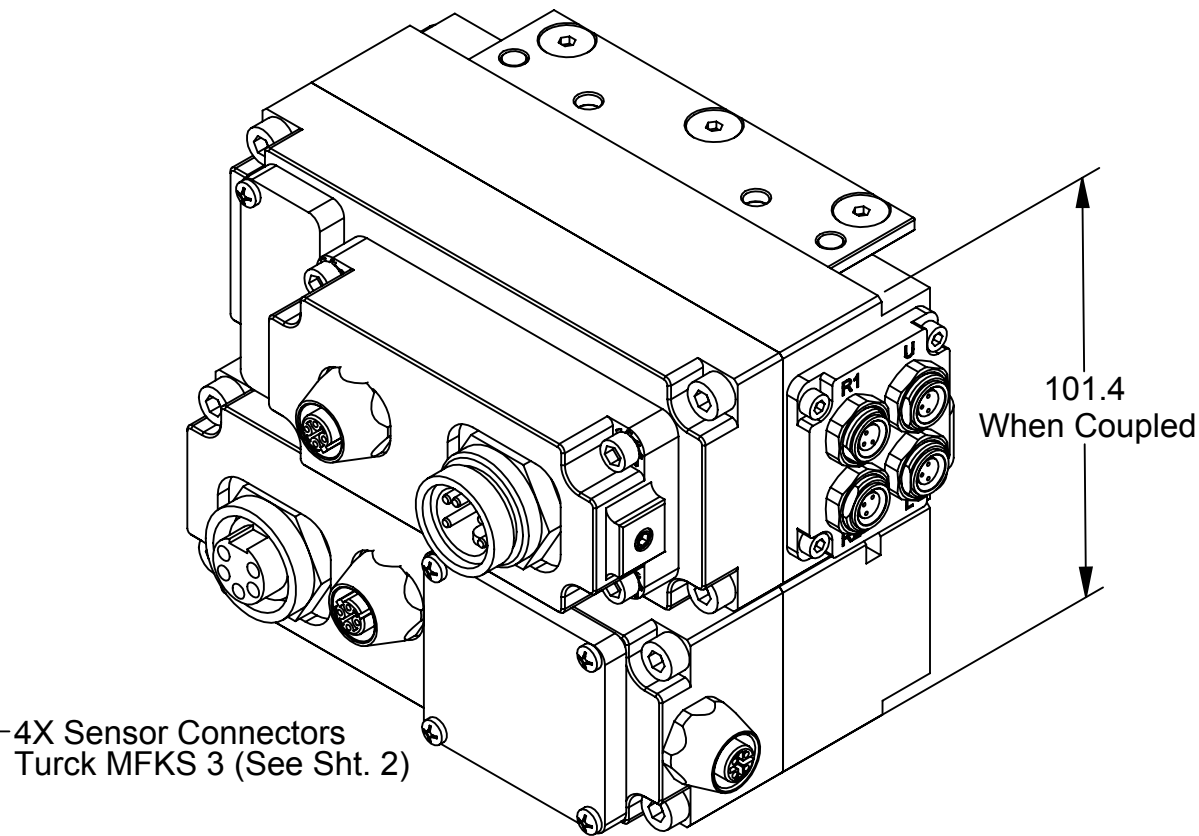
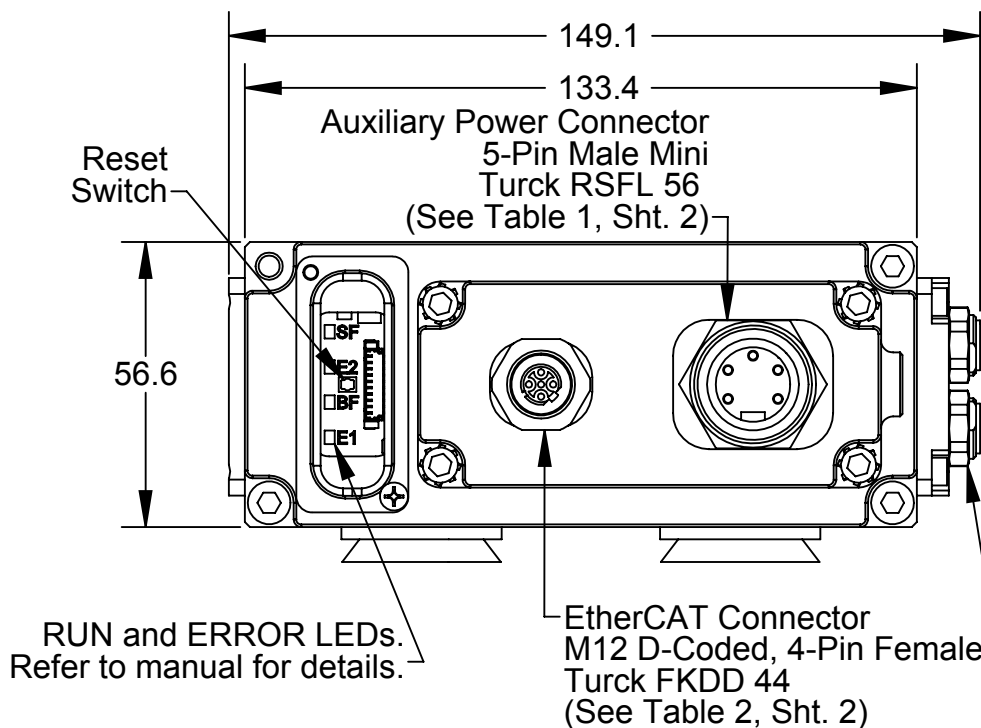


" DANGER!" - Electrical Shock Hazard

This module has a Voltage of 50V or greater, NO contact should be attempted before removing power. This especially includes separation or insertion of the mating connectors or any contact with the tool changer or its components."

REV.	DESCRIPTION	INITIATOR	DATE
04	Eco 15315: Removed 9005-20-1199 Tool Cleat Assembly. Added Electrical Shock Note.	CF	4/18/2017



LV1 Tool Module
9121-VL1-T

- Notes:
- The modules are shown at sheet scale. All connector face views are shown at a 3:2 scale, except as noted.
 - Serviceable parts for the VL1 are shown on Sheet 4. The electrical schematic is shown on Sheet 5.
 - The Auxiliary Power and Ethernet connectors are oriented as shown on the Modules.
 - Valve adapters integrated with the VL1 Master module can be single or double solenoid.

NOTES: UNLESS OTHERWISE SPECIFIED.

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DRAWN BY: M. Hallmark, 09/03/14		TITLE	
CHECKED BY: W. Berrocal, 09/05/14 A. Strotzer, 09/09/14		VL1 EtherCAT Control Module Customer Drawing	
PROJECT # 140728-5	SHEET 1 OF 5	SCALE 2:3	SIZE B
		DRAWING NUMBER 9630-20-VL1	REVISION 04

Rev.	Description	Initiator	Date
-	See Overall	-	-

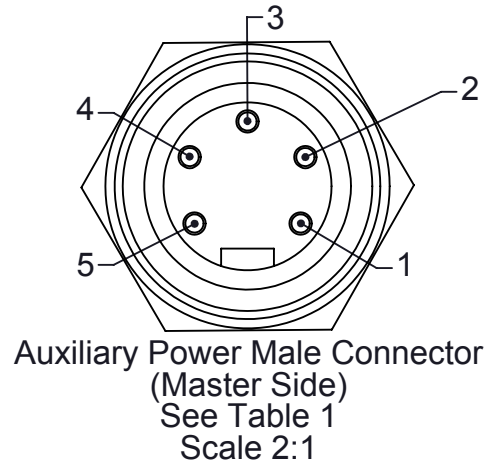


Table 1	
1	US2 GND (Switched)
2	US1 GND (Unswitched)
3	FE
4	US1 (Unswitched)
5	US2 (Switched)

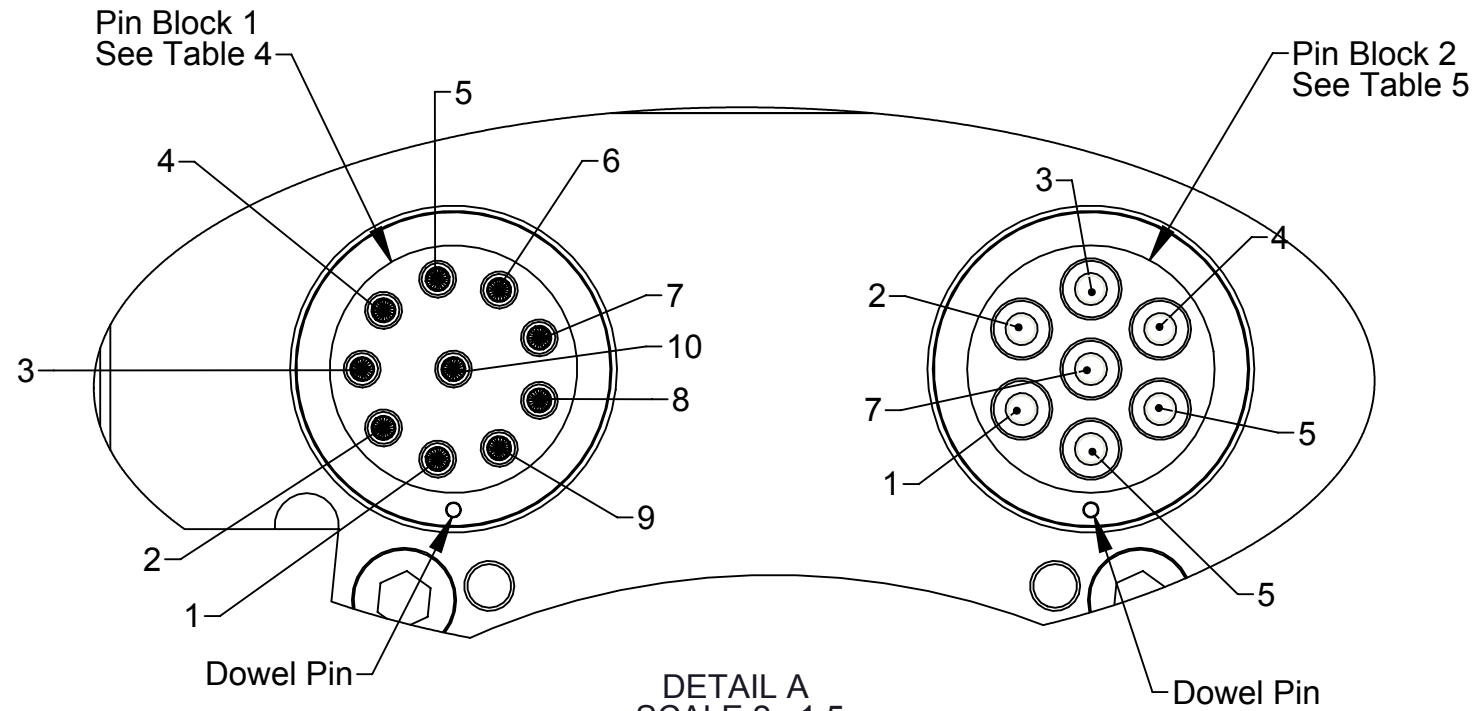


Table 4	
Pin Block 1	
1	RX1+
2	RX1-
3	RS485+
4	RS485-
5	TSI IN
6	TSRV
7	TX1+
8	TX1-
9	TSI OUT
10	TSIV

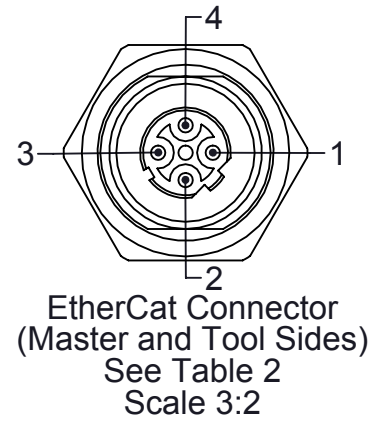


Table 2		
	Master	Tool
1	Tx+	Tx+
2	Rx+	Rx+
3	Tx-	Tx-
4	Rx-	Rx-

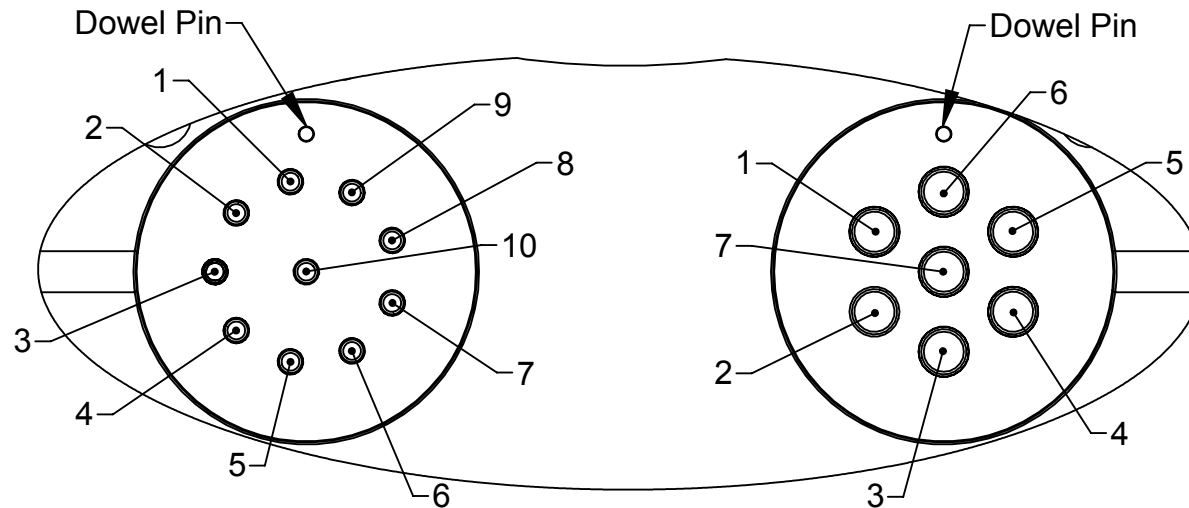


Table 5	
Pin Block 2	
1	US1+
2	TOOL_PRESENT
3	US1-
4	US2-
5	FE
6	US2+
7	24V_TH

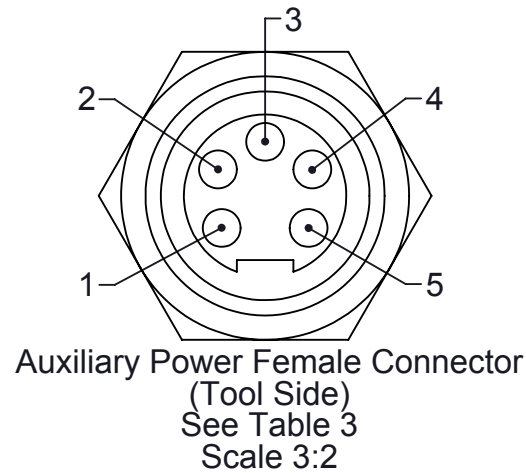


Table 3	
1	US2 GND (Switched)
2	US1 GND (Unswitched)
3	FE
4	US1 (Unswitched)
5	US2 (Switched)

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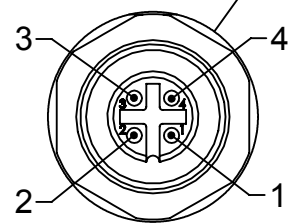
DRAWN BY: M. Hallmark, 09/03/14		TITLE	
CHECKED BY: W. Berrocal, 09/05/14 A. Strotzer, 09/09/14		VL1 EtherCAT Control Module Customer Drawing	
PROJECT # 140728-5	SHEET 2 OF 5	SCALE 1:1	SIZE B
		DRAWING NUMBER 9630-20-VL1	REVISION 04

Tool Changer Integrated Proximity Sensor I/O Connections
4X Turck MFKS 3 (Cables Provided by ATI, Not Shown)

FE Ground Terminal Connection
M5 x 0.8 Threaded hole, 9mm Deep
Hole is accessed by removing M5 stainless steel set screw plug.

FE Ground Terminal Connection
M5 x 0.8 Threaded hole, 9mm Deep
Hole is accessed by removing M5 stainless steel set screw plug.

TSI1 Connector
Turck FK4.4-0.5/18.25
Orientation Not Guaranteed (See Table 6)



TSI Connector
M12 4-Pin Female
Turck FK4.4-0.5/18.25
Scale 3:2

Table 6	
1	24V_TH
2	24V_TH
3	TSI Relay Control
4	TSIV Input

Sensor Input Connection
Typical
Turck MFKS 3
Scale 3:2

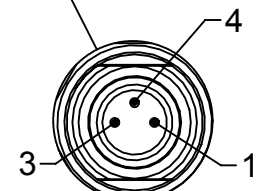
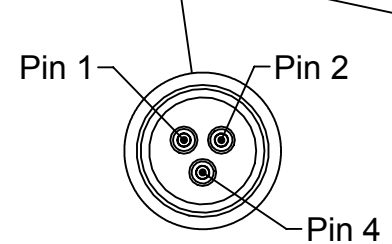
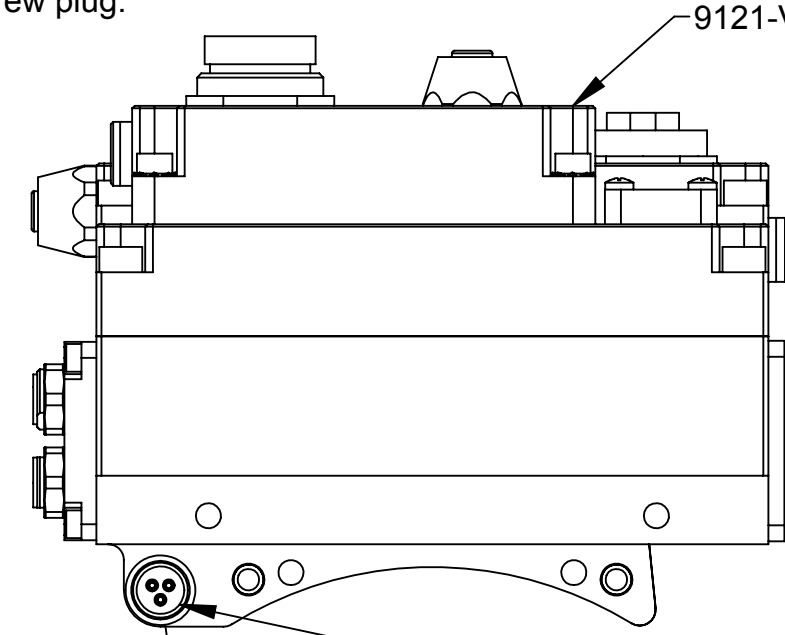


Table 7	
1	V+
3	V-
4	Input

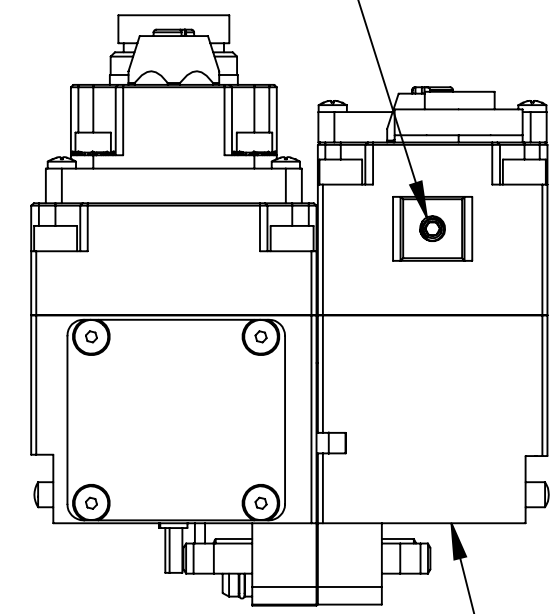


DETAIL K
SCALE 1.5 : 1

Table 8	
1	V+ (Unlatch)
3	V- (Common)
4	V+ (Latch)

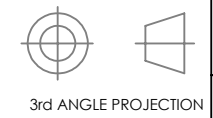


Integrated Tool Changer Valve Connection
(Interfaces with Valve Adapter Module, Not Shown)



NOTES: UNLESS OTHERWISE SPECIFIED.

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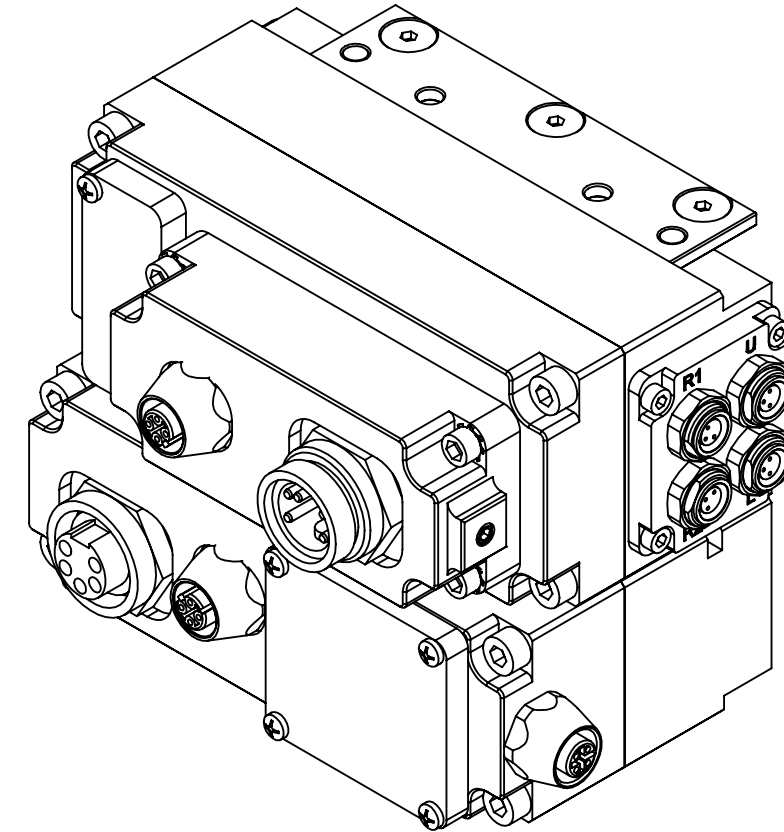
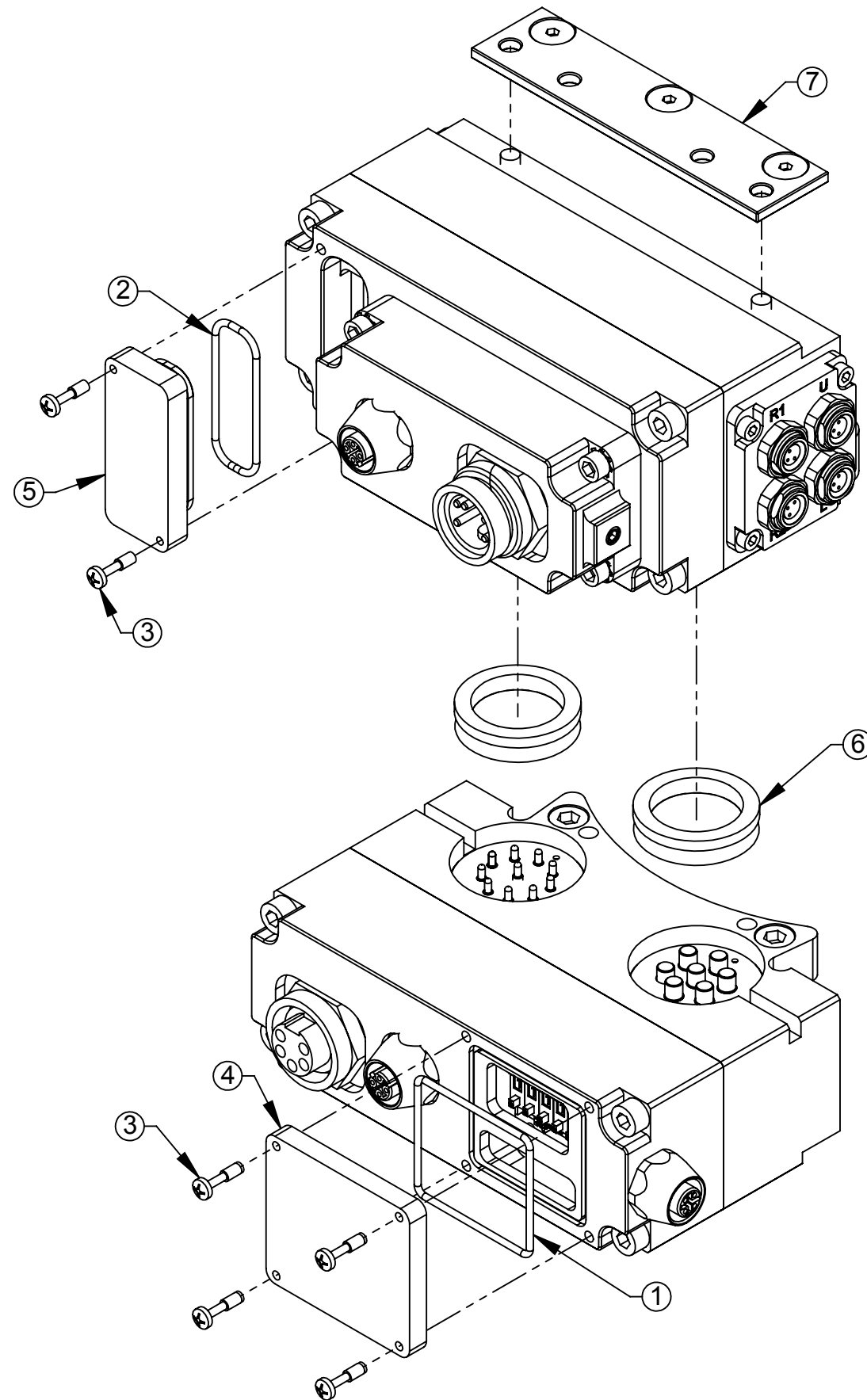


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PROJECT # 140728-5	SHEET 3 OF 5	SCALE 1:1	SIZE B
DRAWING NUMBER 9630-20-VL1		REVISION 04	

VL1 Master and Tool Seviceable Parts



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	3410-0001021-01	O-ring, AS568-031
2	1	3410-0001201-01	O-ring, AS568-024
3	6	3500-9957012-21	Captive Screw M3 x 12 Slotted Head SS
4	1	3700-20-3058	Tool ID Window
5	1	3700-20-4820	Window, Master, DJ Module, Annular Seal
6	2	4010-0000030-01	V-Ring Seal
7	1	9005-20-1198	Master Cleat Assembly

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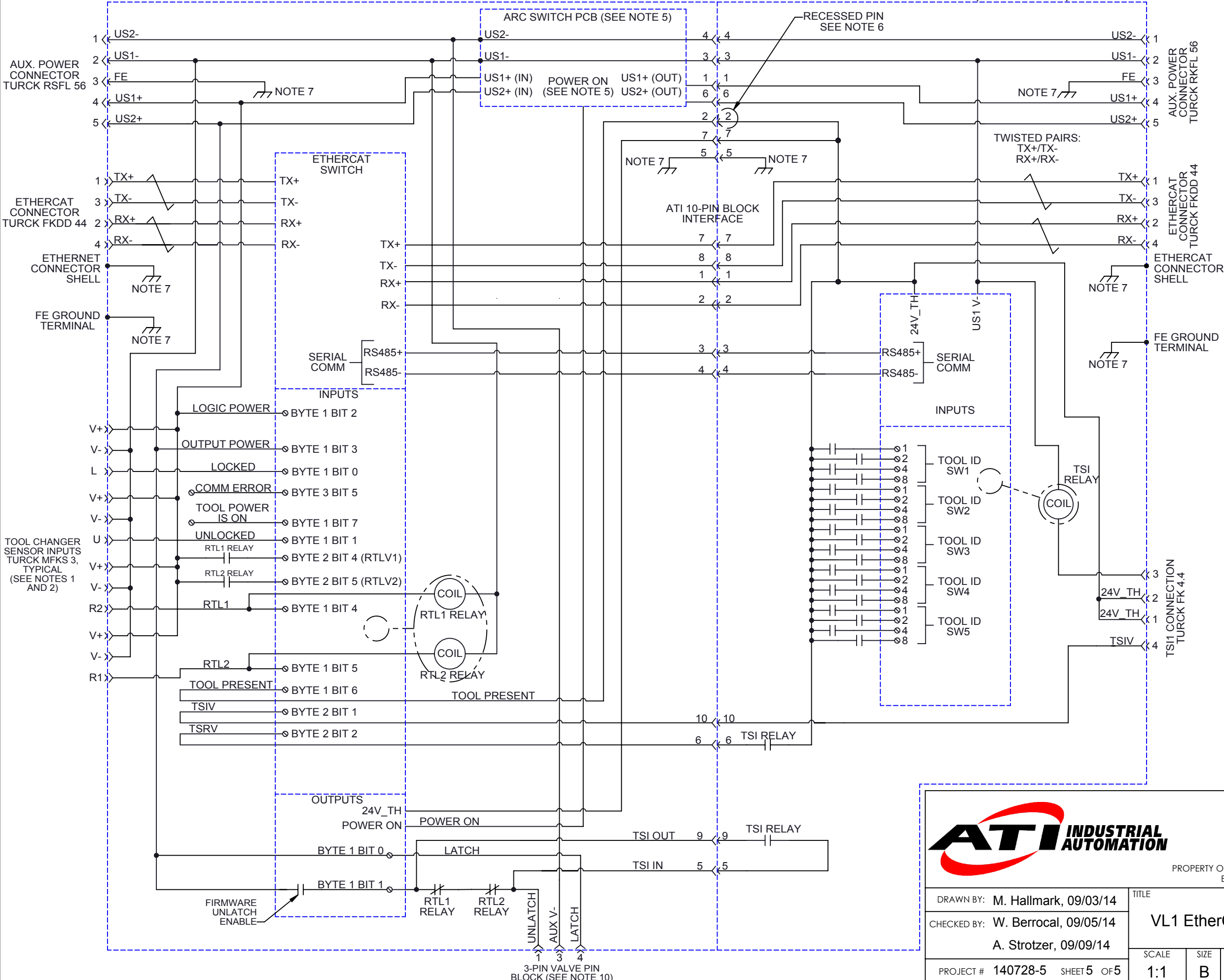
DRAWN BY: M. Hallmark, 09/03/14		TITLE	
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PROJECT # 140728-5	SHEET 4 OF 5	SCALE 2:3	SIZE B
		DRAWING NUMBER 9630-20-VL1	REVISION 04

VL1 MASTER MODULE (9121-VL1-M)

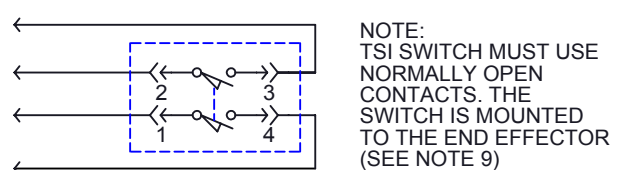
ATI 7-PIN BLOCK INTERFACE

VL1 TOOL MODULE (9121-VL1-T)

Rev.	Description	Initiator	Date
-	See Sheet 1	-	-



- Schematic Notes:**
- Note that the sensors are powered by US1 Unswitched power (US1+).
 - The complete tool changer package comes equipped with external cables that are connected to the sensors.
 - Cables for EtherCAT and Auxiliary Power to the VL1 Modules are supplied by the user.
 - The Tool ID I/O is reported in the VL1 Master Bitmap. Refer to the product manual for more information.
 - The Arc Prevention Circuits turn off US1+ and US2+ during coupling and uncoupling of the Master and Tool. The switching function is controlled by the "POWER ON" signal from the main PC Board.
 - The "TOOL PRESENT" signal is transmitted through a recessed pin in the Tool side Pin Block. This ensures that all of the spring probes and contact pins are touching when power is turned on. Refer to the product manual for additional information.
 - The EtherCAT connector shell, FE, and FE Ground Terminals are connected to the module housing (i.e. Chassis Ground).
 - The current rating of spring probes on the 7-Pin Block is 15A maximum. The spring probes on the 10-Pin Block are rated to 3A maximum.
 - The 9121-VL1-T module supports the use of a mechanical limit switch for integration with TSI. The limit switch connected to the TSI connector must have two sets of N.O. contacts (double-pole, single-throw). A limit switch is available from ATI (p/n 9005-20-1165) but is not included with the VL1 modules. Contact ATI for specific switch requirements.
 - An internal pin block is used to connect the Latch/Unlatch signal to the Valve Adapter, as shown in the schematic.



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A. Strotzer, 09/09/14		SCALE	SIZE
PROJECT # 140728-5 SHEET 5 OF 5	DRAWING NUMBER	1:1	B
	REVISION	9630-20-VL1	04