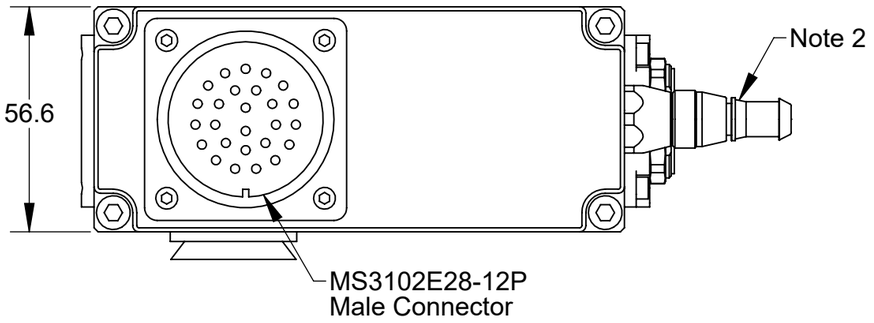
Rev.	Description	Initiator	Date
07	ECO 21814; Updated to reflect changes to the 9121-SA4-T	DS	9/5/2024

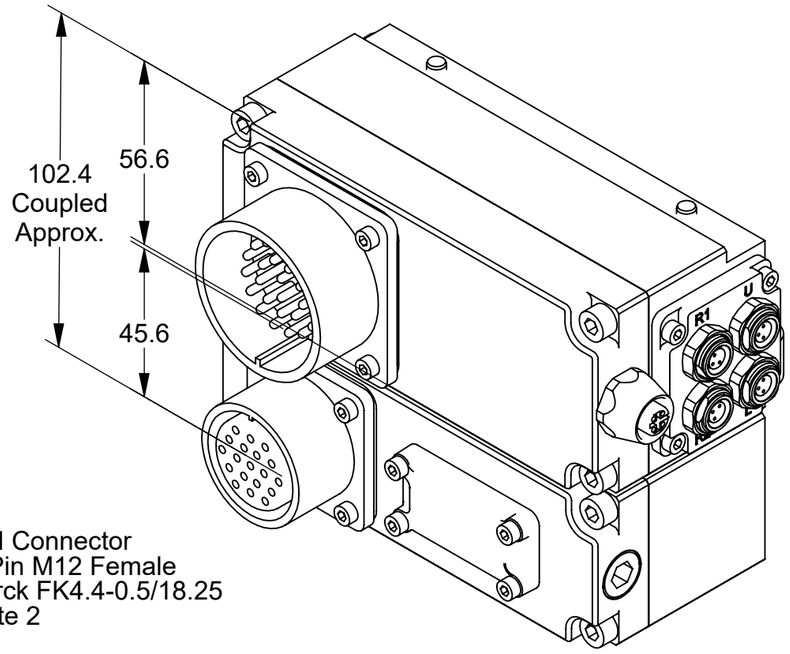
"DANGER!" - Electrical Shock Hazard

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.

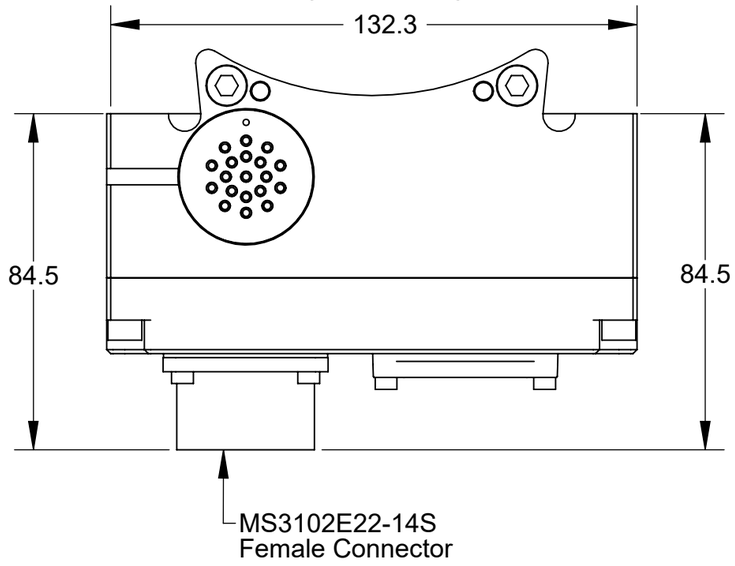
VA6 Family Dimensions

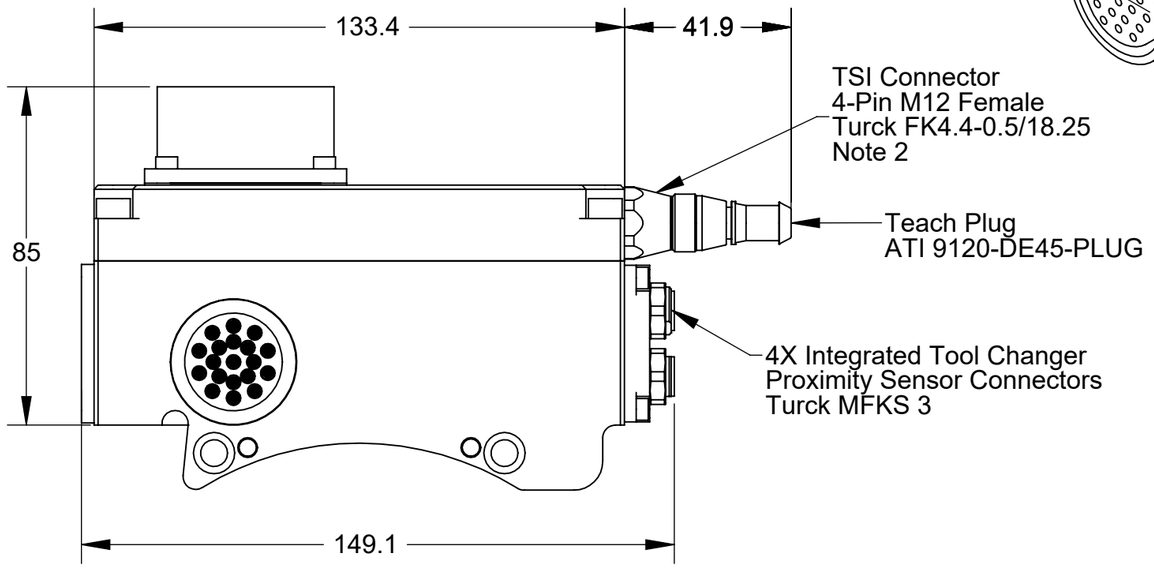
VA6 Master Module
(9121-VA6-M)



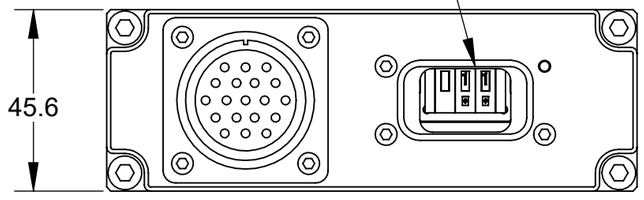


SA Tool Modules
(9121-SAx-T)





Tool ID Switches Accessible
Through Window (If Applicable)
Window Not Shown for Clarity
SA4-T Shown Here



Notes:

1. Sheet Configurations
   Sheet 1: VA6 Family Dimensions
   Sheet 2: VA6 Valve and Sensor Connection Details and Serviceable Parts
   Sheet 3: VA6 Master with SA2 Tool
   Sheet 4: VA6 Master with SA3 Tool (0-9 Tool ID)
   Sheet 5: VA6 Master with SA4 Tool (0-99 Tool ID)
2. Teach Plug is not connected to the Tool Stand Interlock (TSI) connector. Item is bagged separately.

NOTES: UNLESS OTHERWISE SPECIFIED.

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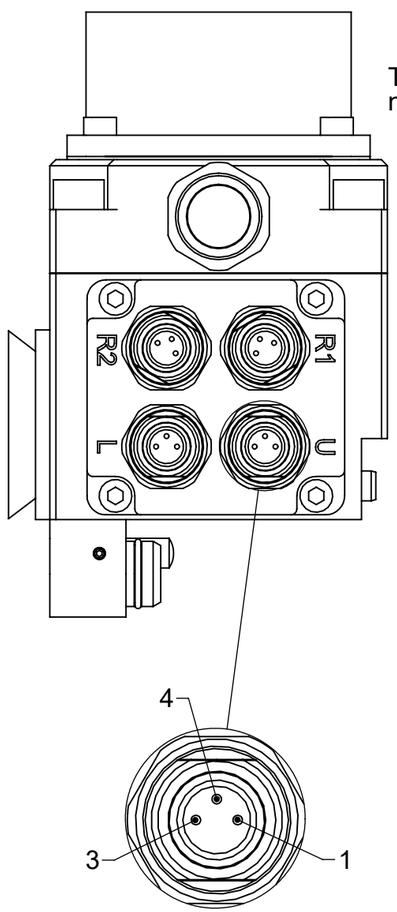
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DRAWN BY: W. Berrocal, 1/15/10
CHECKED BY: D. Mushow, 1/15/09
PROJECT # 100113-1 SHEET 1 OF 5

TITLE: VA6 Family Module Drawing

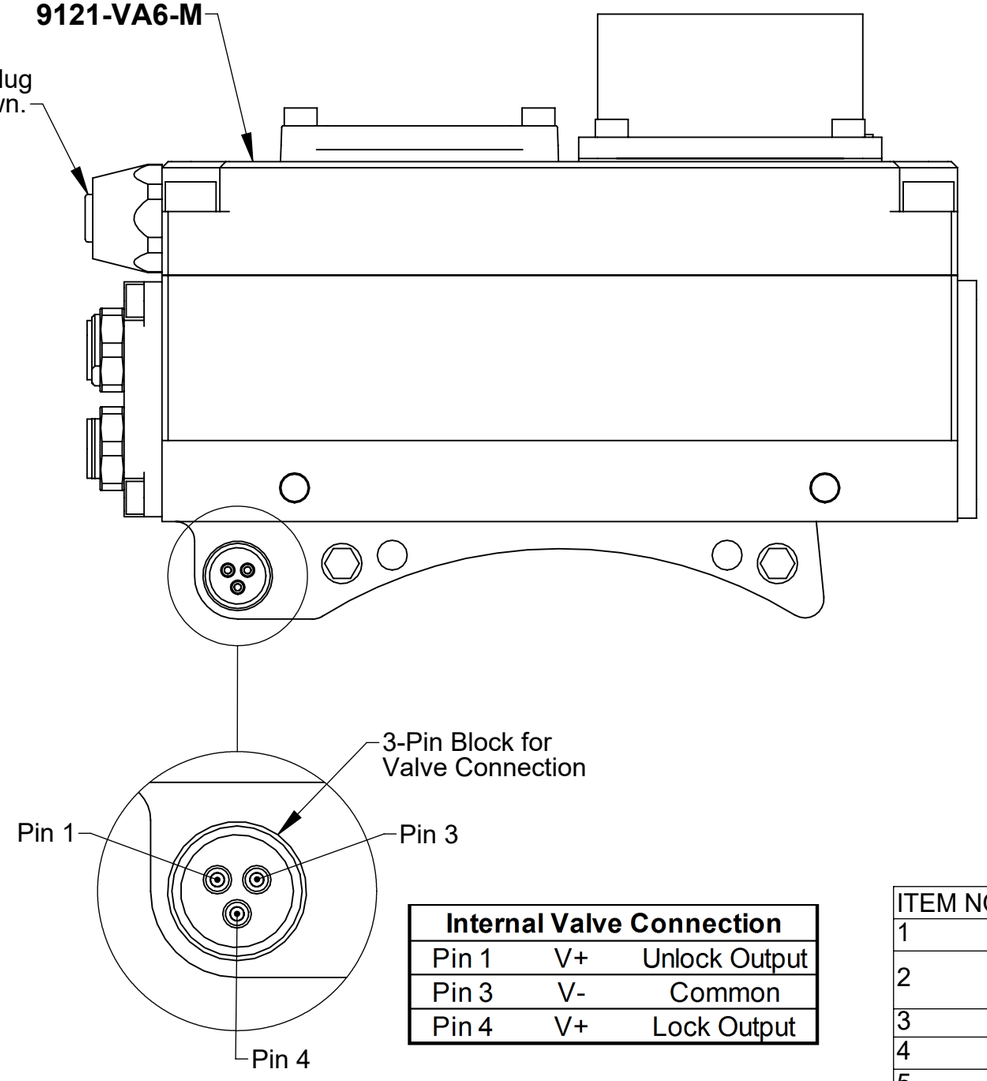
SCALE	SIZE	DRAWING NUMBER	REVISION
2:3	B	9630-20-VA6 Family	07

VA6 Family Serviceable Parts



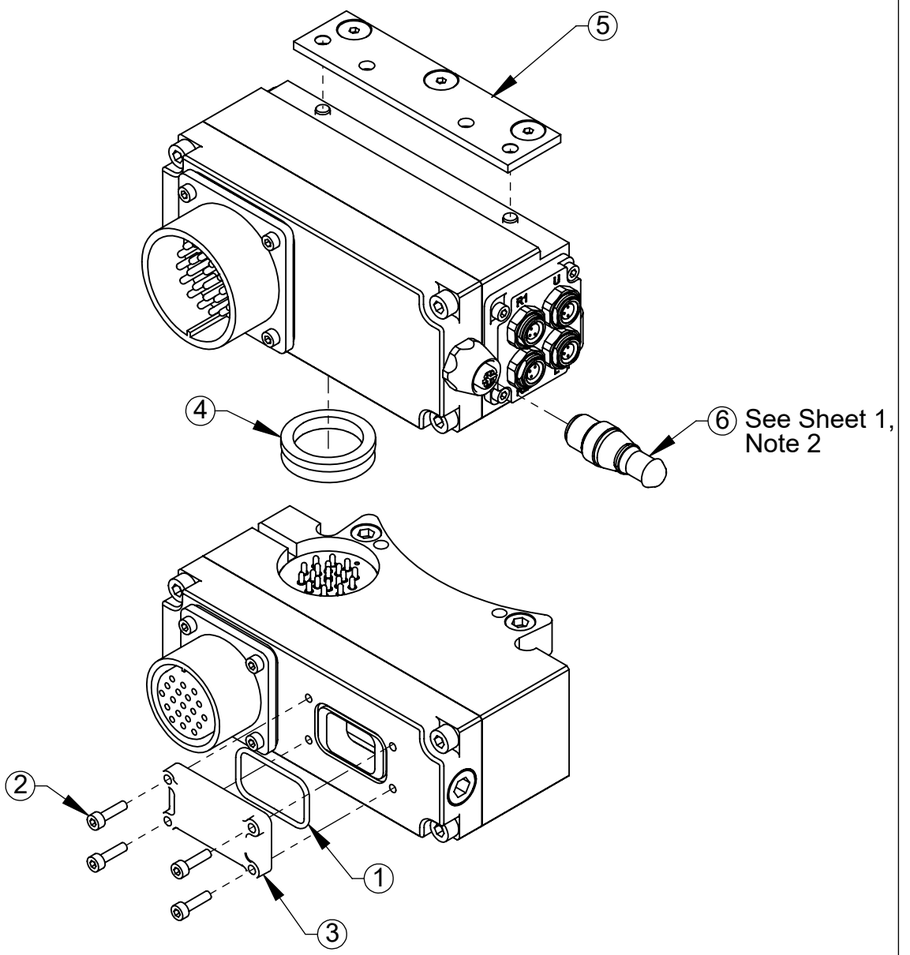
DETAIL B
SCALE 2 : 1

Sensor Connector Wiring (Typical)	
Pin	**Signal**
1	V+ (24 VDC)
3	0 VDC
4	Input



DETAIL A
SCALE 2 : 1

Internal Valve Connection		
Pin 1	V+	Unlock Output
Pin 3	V-	Common
Pin 4	V+	Lock Output



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	3410-0001092-01	O-ring AS568-023
2	4	3500-1058012-15	M3X12 SHCS, 12.9, ISO4762/DIN912, Corrosion Protection Coating
3	1	3700-20-11881	DeviceNet Master Window Thick, Injection Molded
4	1	4010-0000030-01	V-Ring Seal
5	1	9005-20-1198	Master Cleat Sub-Assembly
6	1	9120-DE45-PLUG	Yellow Teach Plug w/ Lanyard and Caution Tags

NOTES: UNLESS OTHERWISE SPECIFIED.

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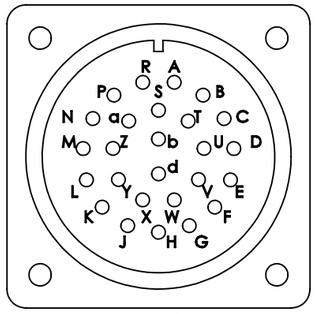
CHECKED BY: D. Mushow, 1/15/09

PROJECT # 100113-1 SHEET 2 OF 5

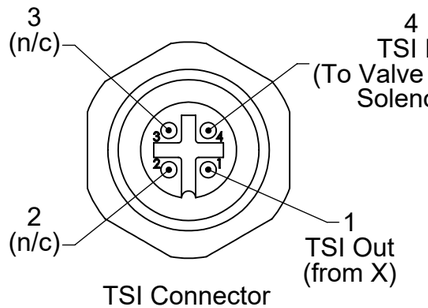
TITLE: VA6 Family Module Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VA6 Family	07

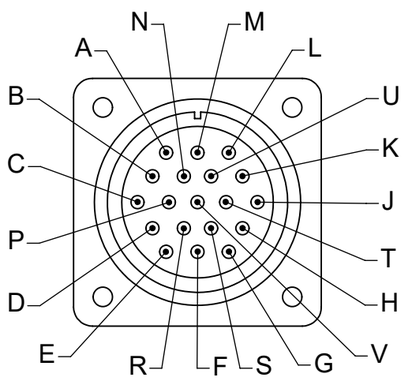
VA6 Master with SA2 Tool



Amphenol Connector
Master Side
MS3102E28-12P
Face View
Scale 1:1



TSI Connector
VA6 Master Side
Scale 2:1
(4-Pin Euro)



Amphenol Connector
Tool Side
MS3102E22-14S
Face View
Scale 1:1

VA6 Master MS3102E28-12P Male Connector			SA2 Tool MS3102E22-14S Female Connector	
0 Vdc Reference	A	>>	A	0 Vdc Reference
24 Vdc (I/P)	B	>>	B	24 Vdc (I/P)
available	C	>>	C	available
available	D	>>	D	available
available	E	>>	E	available
available	F	>>	F	available
available	G	>>	G	available
available	H	>>	H	available
available	J	>>	J	available
available	K	>>	K	available
available	L	>>	L	available
available	M	>>	M	available
available	N	>>	N	available
available	P	>>	P	available
available	R	>>	R	available
available	S	>>	S	available
available	T	>>	T	available
available	U	>>	U	available
available	V	>>	V	available
Lock O/P	W			
(1) TSI Connection	X			
not available	Y			
RTL #1	Z			
RTL #2	a			
Lock I/P	b			
Unlock I/P	d			

Controller Outputs

Pin	*Signal*	*Description*
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)
X	24 VDC	Unlock Solenoid Supply

Controller Inputs

Pin	*Signal*	*Description*
Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input

General Notes:

1. Pin A is first mate and last break during a tool change and is specified for use as 0 VDC and/or ground service.
2. The VA6-M is supplied with a Teach Plug (part # 9120-DE45-PLUG) to make the TSI circuit (Pin 1 to Pin 4 on TSI Connector). It is recommended that the customer integrate a mechanical limit switch to use with this circuit. The limit switch would be mounted to indicate that the robot and tool changer are in the stand, thus making the circuit and only allowing the tool changer to uncouple while in the stand. Contact ATI for further assistance.

NOTES: UNLESS OTHERWISE SPECIFIED.

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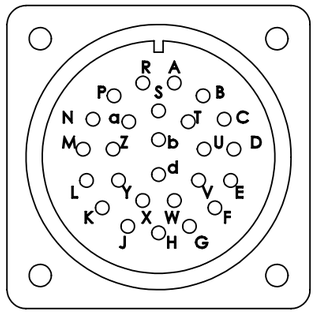
CHECKED BY: D. Mushow, 1/15/09

PROJECT # 100113-1 SHEET 3 OF 5

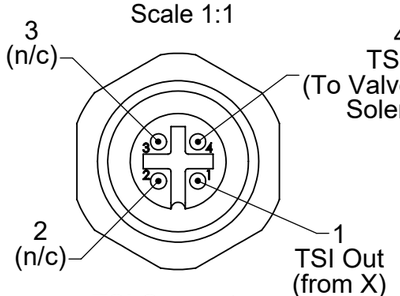
TITLE: VA6 Family Module Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VA6 Family	07

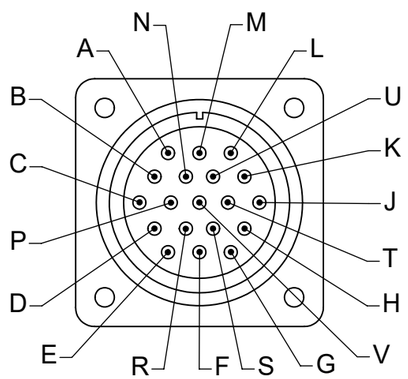
VA6 Master with SA3 Tool (0-9 Tool ID)



Amphenol Connector
Master Side
MS3102E28-12P
Face View
Scale 1:1



TSI Connector
VA6 Master Side
Scale 2:1
(4-Pin Euro)



Amphenol Connector
Tool Side
MS3102E22-14S
Face View
Scale 1:1

	VA6 Master MS3102A28-15P Male Connector		SA3 Tool MS3102E22-14S Female Connector	
0 Vdc Reference	A	>>	A	0 Vdc Reference
24 Vdc (I/P & Tool ID)	B	>>	B	24 Vdc (I/P & Tool ID)
available	C	>>	C	available
available	D	>>	D	available
available	E	>>	E	available
available	F	>>	F	available
available	G	>>	G	available
available	H	>>	H	available
available	J	>>	J	available
available	K	>>	K	available
available	L	>>	L	available
available	M	>>	M	available
available	N	>>	N	available
available	P	>>	P	available
available	R	>>	R	available
Tool ID, Bit Value 8	S	>> Tool ID 0-9	S	not available
Tool ID, Bit Value 4	T	>>	T	not available
Tool ID, Bit Value 2	U	>>	U	not available
Tool ID, Bit Value 1	V	>>	V	not available
Lock O/P	W			
(1) TSI Connection	X			
not available	Y			
RTL #1	Z			
RTL #2	a			
Lock I/P	b			
Unlock I/P	d			

Controller Outputs

Pin	*Signal*	*Description*
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)
X	24 VDC	UnLock Solenoid Supply

Controller Inputs

Pin	*Signal*	*Description*
S	Tool ID	Bit Value 8 (See Tool ID Table)
T	Tool ID	Bit Value 4 (See Tool ID Table)
U	Tool ID	Bit Value 2 (See Tool ID Table)
V	Tool ID	Bit Value 1 (See Tool ID Table)
Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input

Tool ID Output

Switch 1	Pin "S"	Pin "T"	Pin "U"	Pin "V"
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

General Notes:

1. Pin A is first mate and last break during a tool change and is specified for use as 0 VDC and/or ground service.

2. The VA6-M is supplied with a Teach Plug (part # 9120-DE45-PLUG) to make the TSI circuit (Pin 1 to Pin 4 on TSI Connector). It is recommended that the customer integrate a mechanical limit switch to use with this circuit. The limit switch would be mounted to indicate that the robot and tool changer are in the stand, thus making the circuit and only allowing the tool changer to uncouple while in the stand. Contact ATI for further assistance.

NOTES: UNLESS OTHERWISE SPECIFIED.

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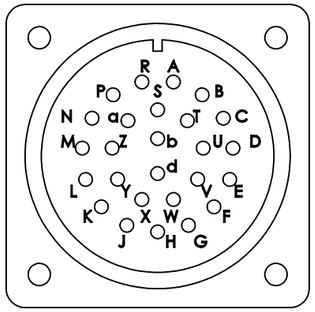
DRAWN BY: W. Berrocal, 1/15/10

CHECKED BY: D. Mushow, 1/15/09

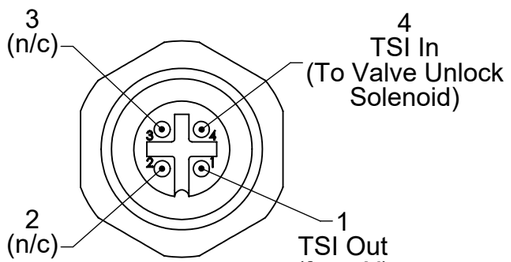
PROJECT # 100113-1 SHEET 4 OF 5

TITLE: VA6 Family Module Drawing

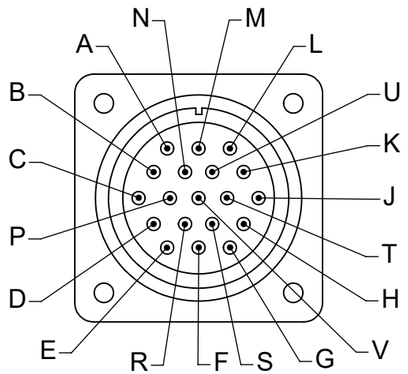
SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VA6 Family	07



Amphenol Connector
Master Side
MS3102E28-12P
Face View
Scale 1:1



TSI Connector
VA6 Master Side
Scale 2:1
(4-Pin Euro)



Amphenol Connector
Tool Side
MS3102E22-14S
Face View
Scale 1:1

VA6 Master with SA4 Tool (0-99 Tool ID)

	VA6 Master MS3102A28-15P Male Connector		SA4 Tool MS3102E22-14S Female Connector	
0 Vdc Reference	A	>>	A	0 Vdc Reference
24 Vdc (I/P & Tool ID)	B	>>	B	24 Vdc (I/P & Tool ID)
available	C	>>	C	available
available	D	>>	D	available
available	E	>>	E	available
available	F	>>	F	available
available	G	>>	G	available
available	H	>>	H	available
available	J	>>	J	available
available	K	>>	K	available
available	L	>>	L	available
SW2 Tool ID, Bit Value 8	M	>>	M	not available
SW2 Tool ID, Bit Value 4	N	>>	N	not available
SW2 Tool ID, Bit Value 2	P	>>	P	not available
SW2 Tool ID, Bit Value 1	R	>>	R	not available
SW1 Tool ID, Bit Value 8	S	>>	S	not available
SW1 Tool ID, Bit Value 4	T	>>	T	not available
SW1 Tool ID, Bit Value 2	U	>>	U	not available
SW1 Tool ID, Bit Value 1	V	>>	V	not available
Lock O/P	W			
(1) TSI Connection	X			
not available	Y			
RTL #1	Z			
RTL #2	a			
Lock I/P	b			
Unlock I/P	d			

Tool ID 0-9 Switch 2

Tool ID 0-9 Switch 1

Controller Outputs

Pin	*Signal*	*Description*
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)
X	24 VDC	UnLock Solenoid Supply

Controller Inputs

Pin	*Signal*	*Description*
M	Tool ID	SW2 Bit Value 8 (See Tool ID Table)
N	Tool ID	SW2 Bit Value 4 (See Tool ID Table)
P	Tool ID	SW2 Bit Value 2 (See Tool ID Table)
R	Tool ID	SW2 Bit Value 1 (See Tool ID Table)
S	Tool ID	SW1 Bit Value 8 (See Tool ID Table)
T	Tool ID	SW1 Bit Value 4 (See Tool ID Table)
U	Tool ID	SW1 Bit Value 2 (See Tool ID Table)
V	Tool ID	SW1 Bit Value 1 (See Tool ID Table)
Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input

Tool ID Output

	Pin	Pin	Pin	Pin
Switch 1	"S"	"T"	"U"	"V"
Switch 2	"M"	"N"	"P"	"R"
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

General Notes:

1. Pin A is first mate and last break during a tool change and is specified for use as 0 VDC and/or ground service.
2. The common for Tool ID is tied into the 24VDC line (Pin B). The Tool ID switches are Rated for service at 50V and 100 mA max. Refer to the Tool ID table for switch setup information.
3. The VA6-M is supplied with a Teach Plug (part # 9120-DE45-PLUG) to make the TSI circuit (Pin 1 to Pin 4 on TSI Connector). It is recommended that the customer integrate a mechanical limit switch to use with this circuit. The limit switch would be mounted to indicate that the robot and tool changer are in the stand, thus making the circuit and only allowing the tool changer to uncouple while in the stand. Contact ATI for further assistance.

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DRAWN BY: W. Berrocal, 1/15/10
CHECKED BY: D. Mushow, 1/15/09
PROJECT # 100113-1 SHEET 5 OF 5

TITLE: VA6 Family Module Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VA6 Family	07