

	<b>INSPECTION FORM</b> <b>AUTOMATION – CONTROL CONDUCTORS</b>	Page 1 of 1 ID:
<b>Project</b>	Facility: _____ Area : _____	Project Name: _____ Bid Opportunity: _____

<b>Cable/Conduit Data</b>	Source: _____	Dest.: _____		
	Installation: <input type="checkbox"/> Cable <input type="checkbox"/> Cable Tray <input type="checkbox"/> Strapped <input type="checkbox"/> Direct Buried <input type="checkbox"/> Conduit <input type="checkbox"/> EMT <input type="checkbox"/> Rigid Steel <input type="checkbox"/> Alum. <input type="checkbox"/> PVC <input type="checkbox"/> Other:			
	No. of Conductors: _____	Size: _____	AWG _____	Type: _____
				Rated Voltage: _____ V

<b>Visual Inspection</b>	Cable Identification Tag Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Enclosure Entry Acceptable: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Wire tags installed: <input type="checkbox"/> Yes <input type="checkbox"/> No	Conduit / Cable Supported Appropriately: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Comments: _____			

<b>Insulation Resistance Test</b>	Test Voltage: _____ V	Ambient Temperature: _____ °C	All conductors not under test grounded for each reading: <input type="checkbox"/> Yes <input type="checkbox"/> No						
	<b>#</b>	<b>ID</b>	<b>MΩ</b>	<b>#</b>	<b>ID</b>	<b>MΩ</b>	<b>#</b>	<b>ID</b>	<b>MΩ</b>
	1			19			37		
	2			20			38		
	3			21			39		
	4			22			40		
	5			23			41		
	6			24			42		
	7			25			43		
	8			26			44		
	9			27			45		
	10			28			46		
	11			29			47		
	12			30			48		
	13			31			49		
	14			32			50		
	15			33			51		
	16			34			52		
	17			35			53		
	18			36			54		
1. Utilize 1000VDC Test Voltage for 600V rated cables, 500VDC for cables rated <= 300V. 2. Utilize a single form for each cable / conduit. 3. Disconnect both ends of wiring prior to tests. 4. Test each conductor to ground. All conductors not under test must be grounded during each test. 5. Each reading must not be less than 22 MΩ or significantly less than comparable conductors.									
Comments: _____									
<b>Test Summary:</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed									

	<b>Company</b>	<b>Name</b>	<b>Signature</b>	<b>Date (yyyy/mm/dd)</b>
<b>Performed By</b>				
<b>Checked By</b>				

 	<b>INSPECTION FORM</b>		Page 1 of 2
	<b>AUTOMATION – TWISTED SHIELDED PAIRS</b>		Cable ID:
<b>Project</b>	Facility:		Project Name:
	Area :		Bid Opportunity:

<b>Cable/Conduit Data</b>	Source:		Dest.:	
	Installation: <input type="checkbox"/> Cable <input type="checkbox"/> Cable Tray <input type="checkbox"/> Strapped <input type="checkbox"/> Direct Buried		<input type="checkbox"/> Conduit <input type="checkbox"/> EMT <input type="checkbox"/> Rigid Steel <input type="checkbox"/> Alum. <input type="checkbox"/> PVC <input type="checkbox"/> Other:	
	No. of Pairs:	Size:	AWG	Type:

<b>Visual Inspection</b>	Cable Identification Tag Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		Enclosure Entry Acceptable: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Wire tags installed: <input type="checkbox"/> Yes <input type="checkbox"/> No		Conduit / Cable Supported Appropriately: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Comments:			

<b>Insulation Resistance Test</b>	Test Voltage: V		Ambient Temperature: °C		All conductors not under test grounded for each reading: <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Pr	ID	Cond. 1 (+) to Gnd (MΩ)	Cond. 2 (-) to Gnd (MΩ)	Shield to Gnd (MΩ)	Pr	ID	Cond. 1 (+) to Gnd (MΩ)	Cond. 2 (-) to Gnd (MΩ)	Shield to Gnd (MΩ)
	1					13				
	2					14				
	3					15				
	4					16				
	5					17				
	6					18				
	7					19				
	8					20				
	9					21				
	10					22				
	11					23				
12					24					
<ol style="list-style-type: none"> <li>1. Utilize 1000VDC Test Voltage for 600V rated cables, 500VDC for cables rated &lt;= 300V.</li> <li>2. Utilize a single form for each cable / conduit.</li> <li>3. Disconnect both ends of wiring prior to tests.</li> <li>4. Test each conductor to ground. All conductors and shields not under test must be grounded during each test.</li> <li>5. Each reading must not be less than 22 MΩ or significantly less than comparable conductors.</li> </ol>										
Comments:										
<b>Test Summary:</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed										

**INSPECTION FORM  
AUTOMATION – TWISTED SHIELDED PAIRS**

ID:

Continuity Test	Pr	ID	Cond. 1 (+) to Cond. 2 (-) (mΩ)	Cond. 1 (+) to Shield (mΩ)	Pr	ID	Cond. 1 (+) to Cond. 2 (-) (mΩ)	Cond. 1 (+) to Shield (mΩ)
	1				13			
	2				14			
	3				15			
	4				16			
	5				17			
	6				18			
	7				19			
	8				20			
	9				21			
	10				22			
	11				23			
	12				24			
1. Record resistance from one end for each connection shown, which shall be made at the other end of the cable.								
Comments:								
Test Summary: <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed								

	Company	Name	Signature	Date (yyyy/mm/dd)
Performed By				
Checked By				



# INSTRUMENTATION SWITCH CHECKLIST

Project	
Facility:	Project Name:
Area :	Bid Opportunity:

Instrument		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:

Inspection Checklist		
No.	Item to be Inspected	Pass (P/F)
1.	Instrument type and class per P&ID and specification	
2.	Instrument tag(s) installed and correct	
3.	Installation of sensor complete and correct	
4.	Block and drain valves	
5.	Pneumatic / hydraulic tubing leak tested	
6.	Heat tracing / insulation / instrument housing	
7.	Wiring correct	
8.	Drawings marked up as-built	
9.	HMI Graphic symbol and tag correct	

State Checklist						
State	State Desc	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	

Calibration					
Transition	Setpoint Trip Point (incl. units)	Actual Trip Point (incl. units)	Setpoint Time Delay	Actual Time Delay	Pass (P/F)
0 → 1					
1 → 0					

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>Tested By</b>				
<b>Witnessed By</b>				



# INSTRUMENTATION TRANSMITTER LOOP CHECKLIST

Project	
Facility:	Project Name:
Area :	Bid Opportunity:

Instrument (Sensor / Element)		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:

Transmitter		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:
Units:	Design Range:	
Output	<input type="checkbox"/> 4-20 mA <input type="checkbox"/> Modbus <input type="checkbox"/> Other: <input type="checkbox"/> 0-10 V <input type="checkbox"/> Ethernet IP	

Inspection Checklist			
No.	Item to be Inspected	Comments	Pass (P/F)
1.	Instrument type and class per P&ID and specification		
2.	Instrument tag(s) installed and correct		
3.	Installation of sensor complete and correct		
4.	Block and drain valves		
5.	Pneumatic / hydraulic tubing leak tested		
6.	Heat tracing / insulation / instrument housing		
7.	Impulse lines pressure tested		
8.	Wiring correct		
9.	Drawings marked up as-built		
10.	HMI Graphic symbol, tag and units correct		

Signal Validation					
Input Signal	Location	Design Value	Actual Value	Error (%)	Pass (P/F)
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				

**Notes:**

1. Attach factory calibration forms for all instruments where provided and/or specified.
2. Provide instrument parameters for each parameter changed from the factory default.

Comments:
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	Company	Name	Signature	Date (yyyy/mm/dd)
<b>Tested By</b>				
<b>Witnessed By</b>				

Project	
Facility:	Project Name:
Area :	Bid Opportunity:

Control Device		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:

Inspection Checklist		
No.	Item to be Inspected	Pass (P/F)
1.	Actuator type and class per P&ID and specification	
2.	Instrument tag(s) installed and correct	
3.	Installation of actuator complete and correct	
4.	Wiring correct	
5.	Drawings marked up as-built	
6.	HMI graphic symbol, tag and units correct	

Control Validation					
Control Output	Location	Design Value	Actual Value	Error (%)	Pass (P/F)
0%	PLC Output				
	Field Device				
50%	PLC Output				
	Field Device				
100%	PLC Output				
	Field Device				

Notes:

1. Attach factory calibration forms for all instruments where provided and/or specified.
2. Provide instrument parameters for each parameter changed from the factory default.

Comments:
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	Company	Name	Signature	Date (yyyy/mm/dd)
<b>Tested By</b>				
<b>Witnessed By</b>				



# PID CONTROLLER CHECKLIST

Project	
Facility:	Project Name:
Area :	Bid Opportunity:

Controller Loop	
Tag:	Description:

Test Checklist			
No.	Item to be Inspected	Comments	Pass (P/F)
1.	Startup Test		
2.	Input signal positive bump test		
3.	Input signal negative bump test		
4.	Bumpless auto-manual control transition		
4.	Manual output capability		
5.	Bumpless manual-auto control transition		
6.	HMI graphic symbols, tag and units correct		
7.	HMI equipment faceplate correct		

Final PID Tuning Values		
P :	I :	D :

Notes:

1. Attach printouts of trends for various tests, with final PID tuning values.

Comments:
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	Company	Name	Signature	Date (yyyy/mm/dd)
Tested By				
Witnessed By				





# PLC DISCRETE INPUT CHECKLIST

Project	
Facility:	Project Name:
Area :	Bid Opportunity:

PLC	
PLC ID:	Description:
Rack:	Slot:

Pt	Tag	Description	State	State Desc.	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	



### PLC DISCRETE INPUT CHECKLIST

			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>Tested By</b>				
<b>Witnessed By</b>				



# PLC DISCRETE OUTPUT CHECKLIST

## Project

Facility:	Project Name:
Area :	Bid Opportunity:

## PLC

PLC ID:	Description:
Rack:	Slot:

Pt	Tag	Description	State	State Desc.	PLC Output	Field Device	Pass (P/F)
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	



### PLC DISCRETE OUTPUT CHECKLIST

			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>Tested By</b>				
<b>Witnessed By</b>				