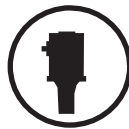


iQ Series ULTRASONIC PRESS SYSTEM

i220



AUTOMATED



HAND PROBE



PRESS

Automation Interface Guidelines



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System Inputs/Outputs

Note: For detailed signal descriptions, please refer to the product manual.

Pin	Color	Signal Name	Description
J1-1	BLK	Solenoid Output	Non-isolated active low output, referenced to chassis ground (J1-16, 17, & 18), that is active from start of a cycle to end of Hold (IN CYCLE).
J1-2	WHT	In Cycle Status Output	Isolated output referenced to Output Common (J1-22 & 23) that is active when IN CYCLE.
J1-3	RED	Front Panel Lockout Input	Isolated Input referenced to Input Common (J1-15) that locks the front panel interface when active.
J1-4	GRN	READY RELAY NO Output	Connected to Ready Relay Common when ready to start a cycle
J1-5	ORN	READY RELAY Common	Connected to Ready Relay NO Output when ready to start a cycle
J1-6	BLU	Not Used	
J1-7	WHT/BLK	Not Used	
J1-8	RED/BLK	+22VDC Power Supply Out	+22VDC for customer automation. Limited to 500mA total for both pins.
J1-9	GRN/BLK	+22VDC Power Supply Out	+22VDC for customer automation. Limited to 500mA total for both pins.
J1-10	ORN/BLK	Bad Part Status Output	Isolated output referenced to Output Common (J1-22 & 23) that activates when bad part limit(s) are exceeded.
J1-11	BLU/BLK	Top of Stroke Status Output	Isolated output referenced to Output Common (J1-22 & 23) that activates when press is at top of stroke.
J1-12	BLK/WHT	Not Used	
J1-13	RED/WHT	Hold Status Output	Isolated output referenced to Output Common (J1-22 & 23) that indicates when in the Hold part of a weld cycle.
J1-14	GRN/WHT	System Latch Reset Input	Isolated input referenced to Input Common (J1-15) that resets the Any Fault or System Overload status outputs.
J1-15	BLU/WHT	Input Common	Isolated Input Common
J1-16	BLK/RED	+22VDC Power Ground	Chassis Ground
J1-17	WHT/RED	+22VDC Power Ground	Chassis Ground
J1-18	ORN/RED	+22VDC Power Ground	Chassis Ground
J1-19	BLU/RED	Ultrasound Active Status	Isolated output referenced to Output Common (J1-22 & 23) that indicates ultrasound is being output.
J1-20	RED/GRN	System Ready Status	Isolated output referenced to Output Common (J1-22 & 23) that is active when the press is ready to start a cycle.
J1-21	ORN/GRN	Any Fault Status	Isolated output referenced to Output Common (J1-22 & 23) that is active when the any fault/alarm is detected.
J1-22	BLK/WHT/RED	Output Common	Isolated Output Common
J1-23	WHT/BLK/RED	Output Common	Isolated Output Common
J1-24	RED/BLK/WHT	U/S Activate Common	Isolated Common for U/S Activate/Cycle Start
J1-25	GRN/BLK/WHT	U/S Activate/Cycle Start Input	Isolated input referenced to Isolated U/S Activate/Cycle Start Input Common that starts a cycle when activated.

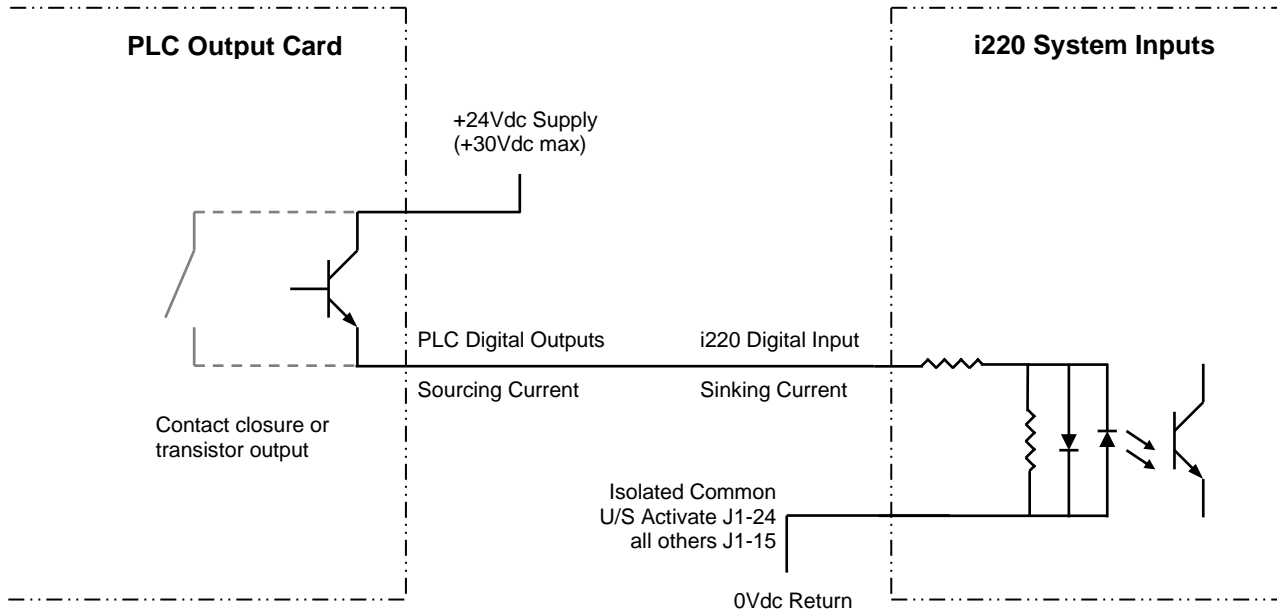
System Input Cables

Part Number	Length
200-1381-03M	3 meters
200-1381-05M	5 meters
200-1381-07M	7 meters
200-1381-09M	9 meters
200-1381-11M	11 meters
200-1381-13M	13 meters

Connecting System Inputs

All System Inputs are optically isolated from the internal circuits and can be connected to sinking or sourcing PLC output cards. The inputs will draw approximately 10mA with a 24Vdc supply. The Systems Inputs can also be configured for a contact closure if necessary.

PLC Sourcing Output Card

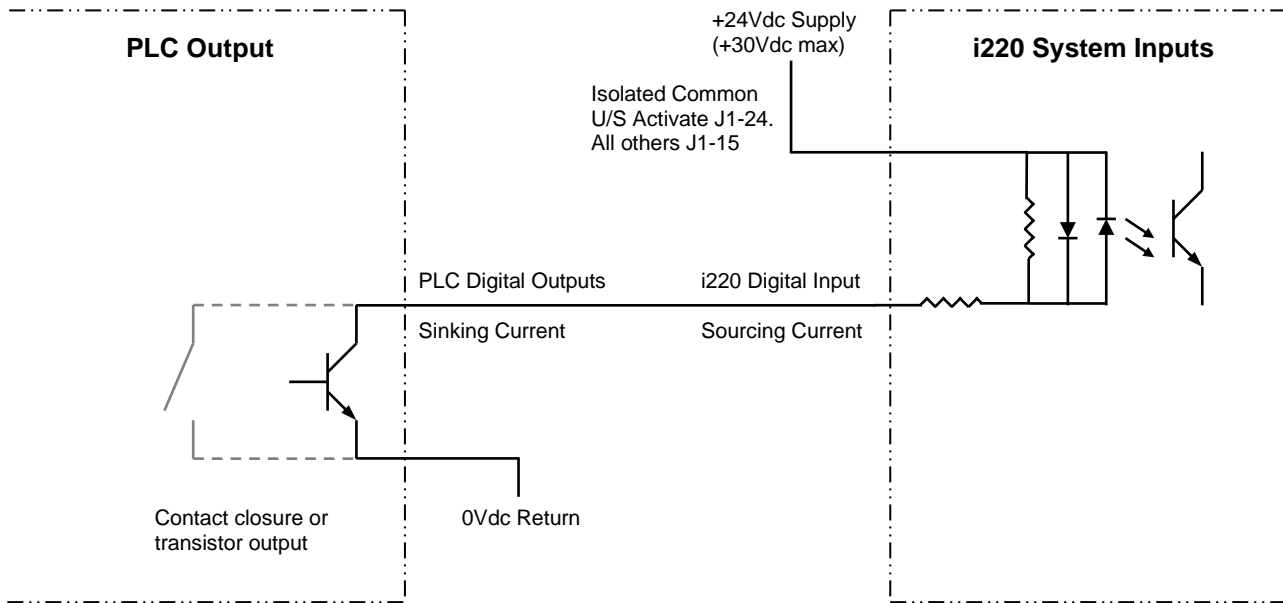


Notes:

1. Dukane's current limited power supply can be substituted for the +24Vdc supply above. Connect +22Vdc (J1-8 or J1-9) to Input Common (J1-15) and 0V Return to the generator Chassis Ground (J1-16, J1-17, or J1-18). Connecting the System Inputs in this way would be similar to activating DPC series System Inputs.
2. Front Panel Lockout Input (J1-3) and System Latch Reset Input (J1-14) share the same Isolated Common (J1-15). The U/S Activate/Cycle Start Input (J1-25) has a separate isolated Common (J1-24). It is critical that the isolated commons are connected to either the positive supply or ground.

Warning: Any connection to the U/S Activate/Cycle Start Input (J1-25) should be disabled during an emergency stop condition.

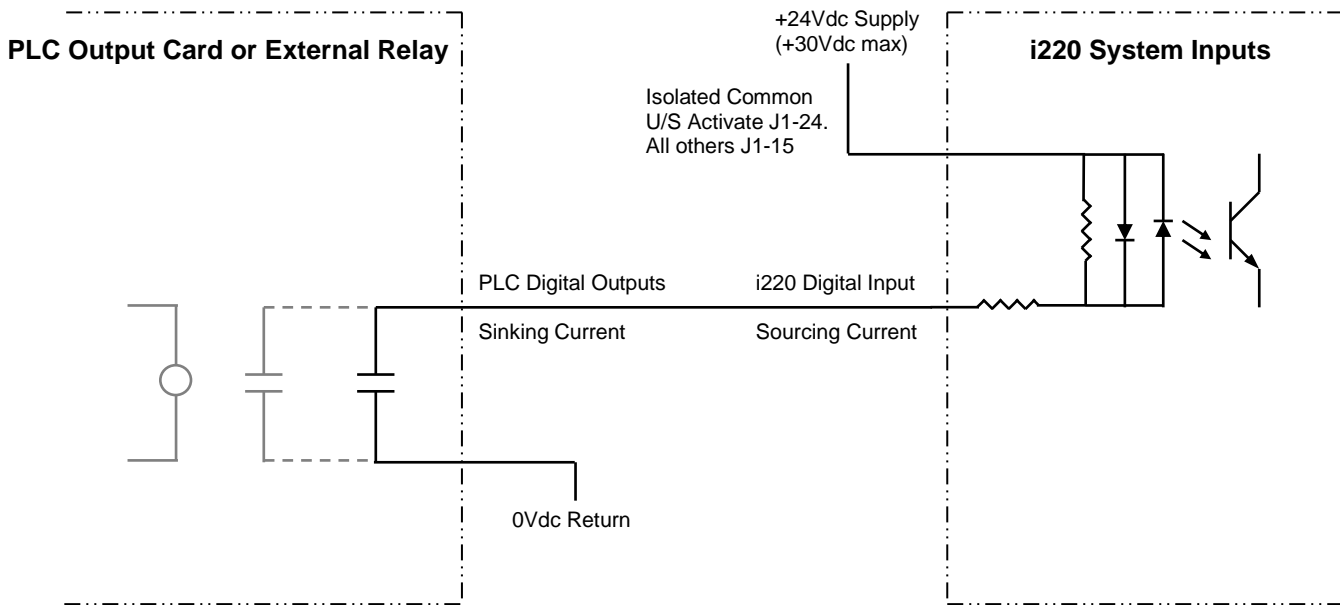
Connecting a PLC Sinking Output Card



Note: Front Panel Lockout Input (J1-3) and System Latch Reset Input (J1-14) share the same Isolated Common (J1-15). The U/S Activate/Cycle Start Input (J1-25) has a separate isolated Common (J1-24). It is critical that the isolated commons are connected to either the positive supply or ground.

Warning: Any connection to the U/S Activate/Cycle Start Input (J1-25) should be disabled during an emergency stop condition.

Relay Contact Closure



Notes:

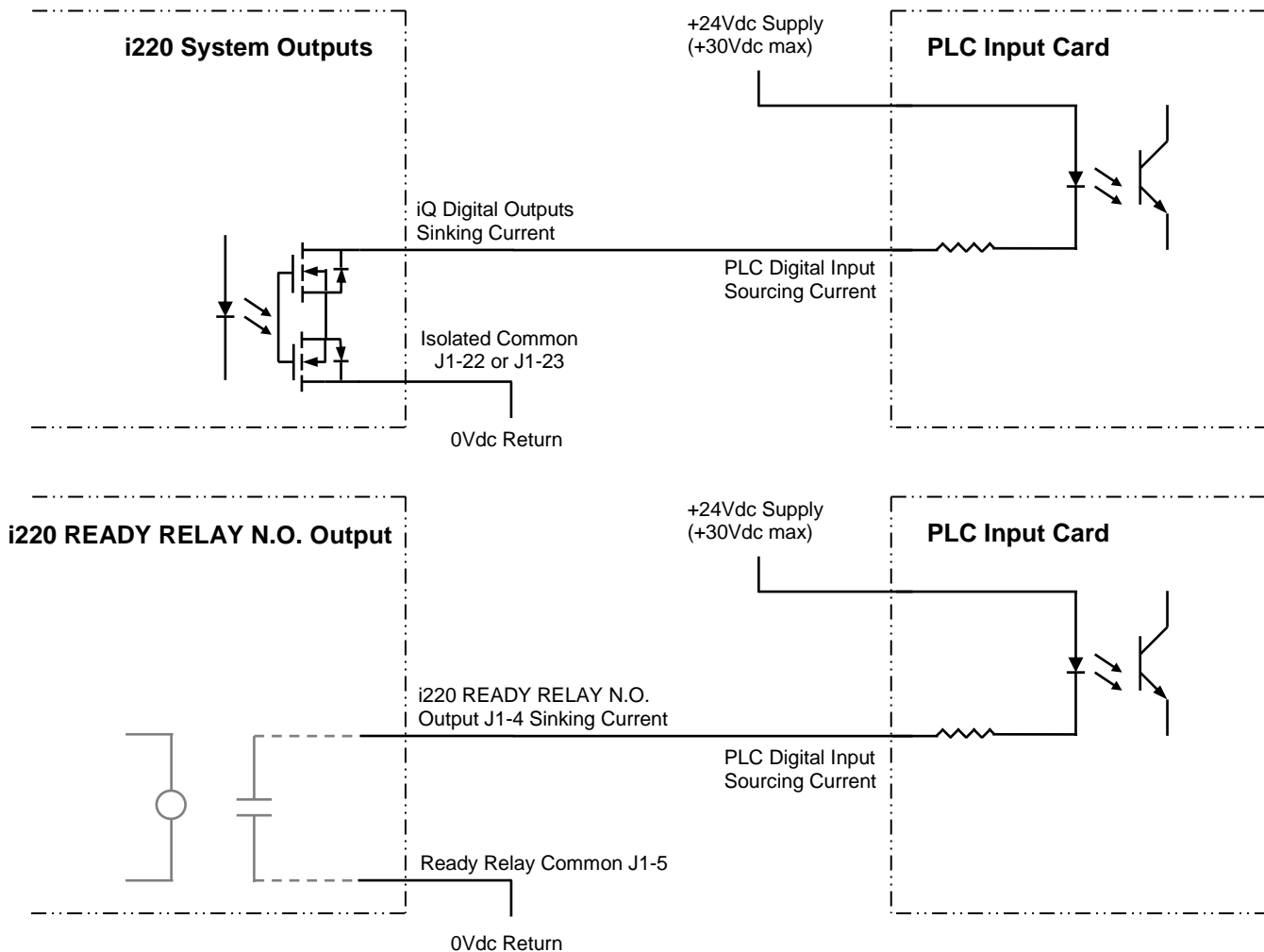
1. Dukane's current limited power supply can be substituted for the +24Vdc supply above. Connecting +22Vdc (J1-8 or J1-9) to Input Common (J1-15) would allow a dry contact closure between any System Input and 0V Return (J1-16, J1-17, or J1-18). Connecting the System Inputs in this way would be similar to activating DPC series System Inputs.
2. Front Panel Lockout Input (J1-3) and System Latch Reset Input (J1-14) share the same Isolated Common (J1-15). The U/S Activate/Cycle Start Input (J1-25) has a separate isolated Common (J1-24). It is critical that the isolated commons are connected to either the positive supply or ground.

Warning: Any connection to the U/S Activate/Cycle Start Input (J1-25) should be disabled during an emergency stop condition.

Connecting System Outputs

All System Outputs but the Solenoid Output are optically isolated from the internal circuits and can be connected to sinking or sourcing PLC input cards. The outputs can sink or source a maximum of 25mA.

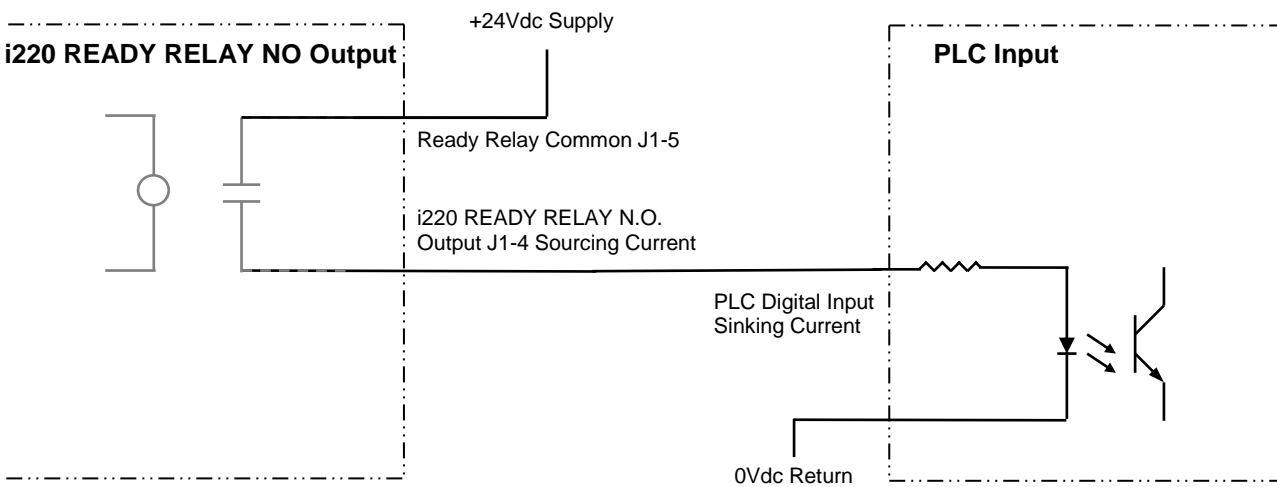
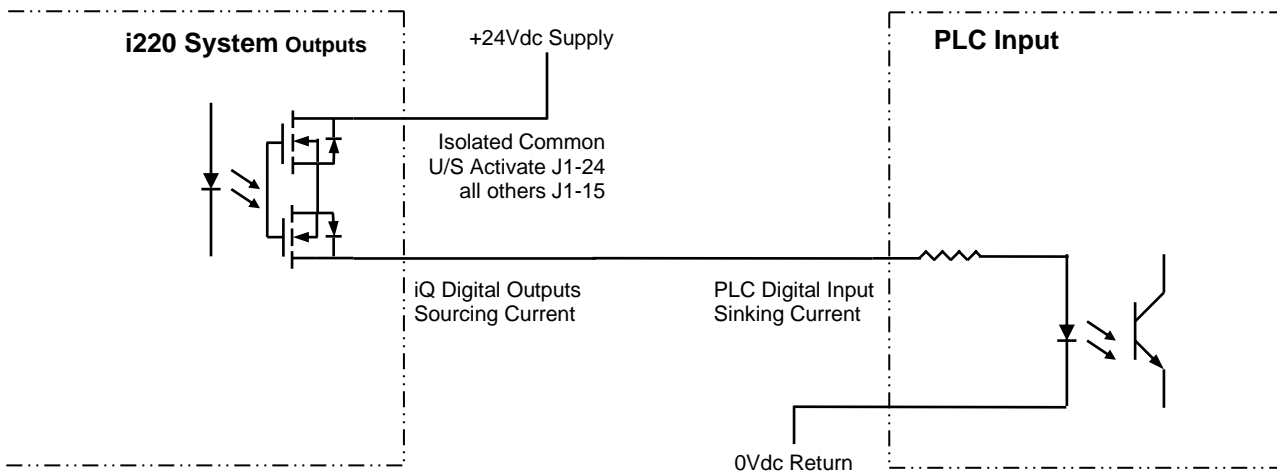
PLC Sourcing Input Card



Notes:

1. The Solenoid Output (J1-1) is not isolated. This output is a sinking output referenced to +22VDC Power Ground (J1-16, J1-17, and J1-18).
2. Ready Relay N.O. Output (J1-4) is an isolated dry closure output to Ready Relay Common (J1-5).
3. All other System Outputs share the same Isolated Common (J1-22 and J1-23). It is critical that the isolated common is connected to either the positive supply or ground.
4. The +22VDC Output (J1-8 & J1-9) can be used for the +24V supply that is shown. This supply is limited to 500mA total for both pins. If this supply is used the 0Vdc return that is shown will be connected to the press chassis ground (J1-16, 17, 18).

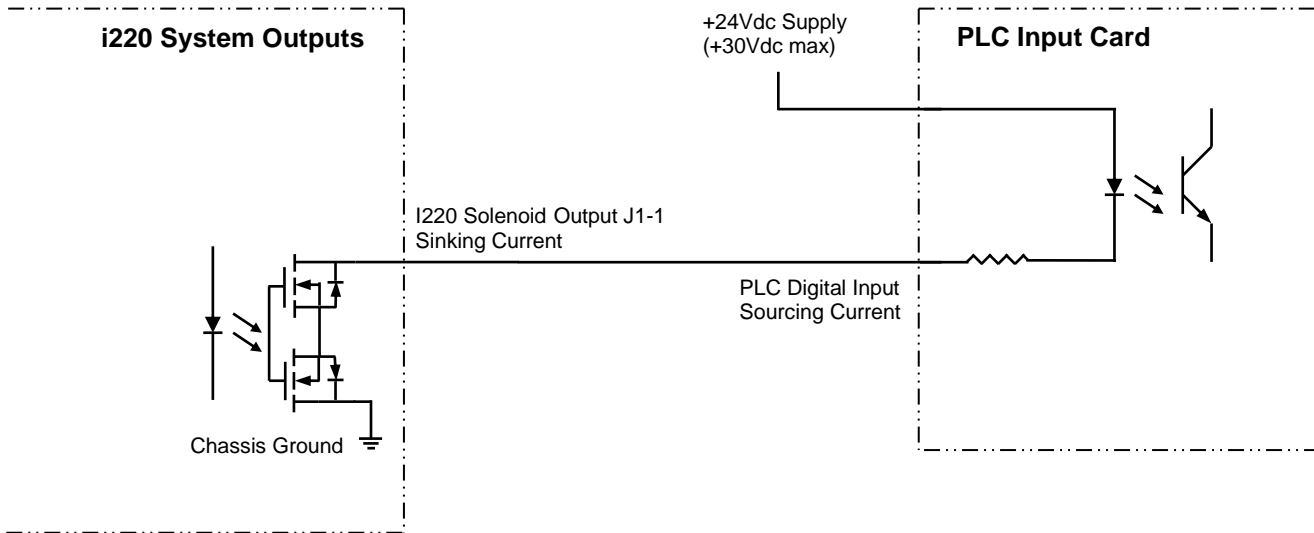
Connecting a PLC Sinking Input Card



Notes:

1. The Solenoid Output (J1-1) is not isolated. This output is a sinking output referenced to +22VDC Power Ground (J1-16, J1-17, and J1-18).
2. Ready Relay N.O. Output (J1-4) is an isolated dry closure output to Ready Relay Common (J1-5).
3. All other System Outputs share the same Isolated Common (J1-22 and J1-23). It is critical that the isolated common is connected to either the positive supply or ground.
4. The +22VDC Output (J1-8 & J1-9) can be used for the +24V supply that is shown. This supply is limited to 500mA total for both pins. If this supply is used the 0Vdc return that is shown will be connected to the press chassis ground (J1-16, 17, 18).

Connecting a PLC Sourcing Input Card to the Solenoid Output



Notes:

1. The Solenoid Output (J1-1) is not isolated. This output is a sinking output referenced to +22VDC Power Ground (J1-16, J1-17, and J1-18).
2. Ready Relay N.O. Output (J1-4) is an isolated dry closure output to Ready Relay Common (J1-5).
3. All other System Outputs share the same Isolated Common (J1-22 and J1-23). It is critical that the isolated common is connected to either the positive supply or ground.
4. The +22VDC Output (J1-8 & J1-9) can be used for the +24V supply that is shown. This supply is limited to 500mA total for both pins. If this supply is used the 0Vdc return that is shown will be connected to the press chassis ground (J1-16, 17, 18).

Automation E-Stop (Abort) Cable Pinouts

Pin	Color	Function	Signal Description
J6-1	BLK	ACTIVATION SWITCH 1 N.O. INPUT	Normally Open (N.O.) dry contact closure to Pin 7
J6-2	RED	ACTIVATION SWITCH 2 N.O. INPUT	Normally Open (N.O.) dry contact closure to Pin 7
J6-3	GRN	AUTOMATION E-STOP (ABORT) INPUT	Normally Closed (N.C.) emergency switch contact
J6-4	WHT	E-STOP (ABORT) SENSE INPUT	Normally Open (N.O.) dry contact closure to ground
J6-5	BRN	+22V RETURN (<i>iQ CHASSIS GROUND</i>)	Internal Ground (Gnd)
J6-6	BLU	ACTIVATION SWITCH 1 N.C. INPUT	Normally Closed (N.C.) dry contact closure to Pin 7
J6-7	ORN	ACTIVATION SWITCH 1 & 2 COM OUTPUT	Connect to common of switches/relays.
J6-8	YEL	ACTIVATION SWITCH 2 N.C. INPUT	Normally Closed (N.C.) dry contact closure to Pin 7
J6-9	VIO	AUTOMATION E-STOP (ABORT) OUTPUT	Normally Closed (N.C.) emergency switch contact

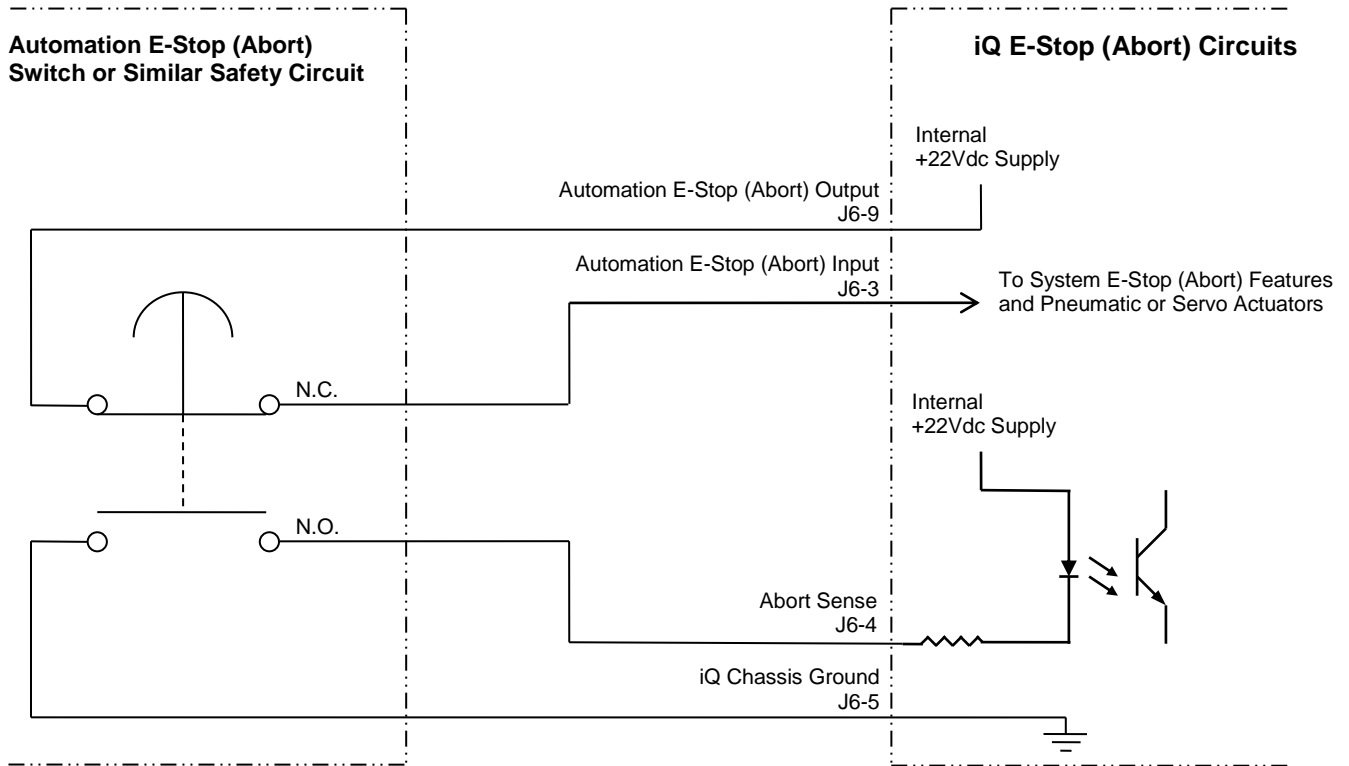
Note: For detailed signal descriptions, please refer to the product manual.

Automation E-Stop (Abort) Cables

Part Number	Length
200-1546-03M	3 meters
200-1546-05M	5 meters
200-1546-07M	7 meters
200-1546-09M	9 meters
200-1546-11M	11 meters
200-1546-13M	13 meters

Connecting an Automation Abort Safety Circuit

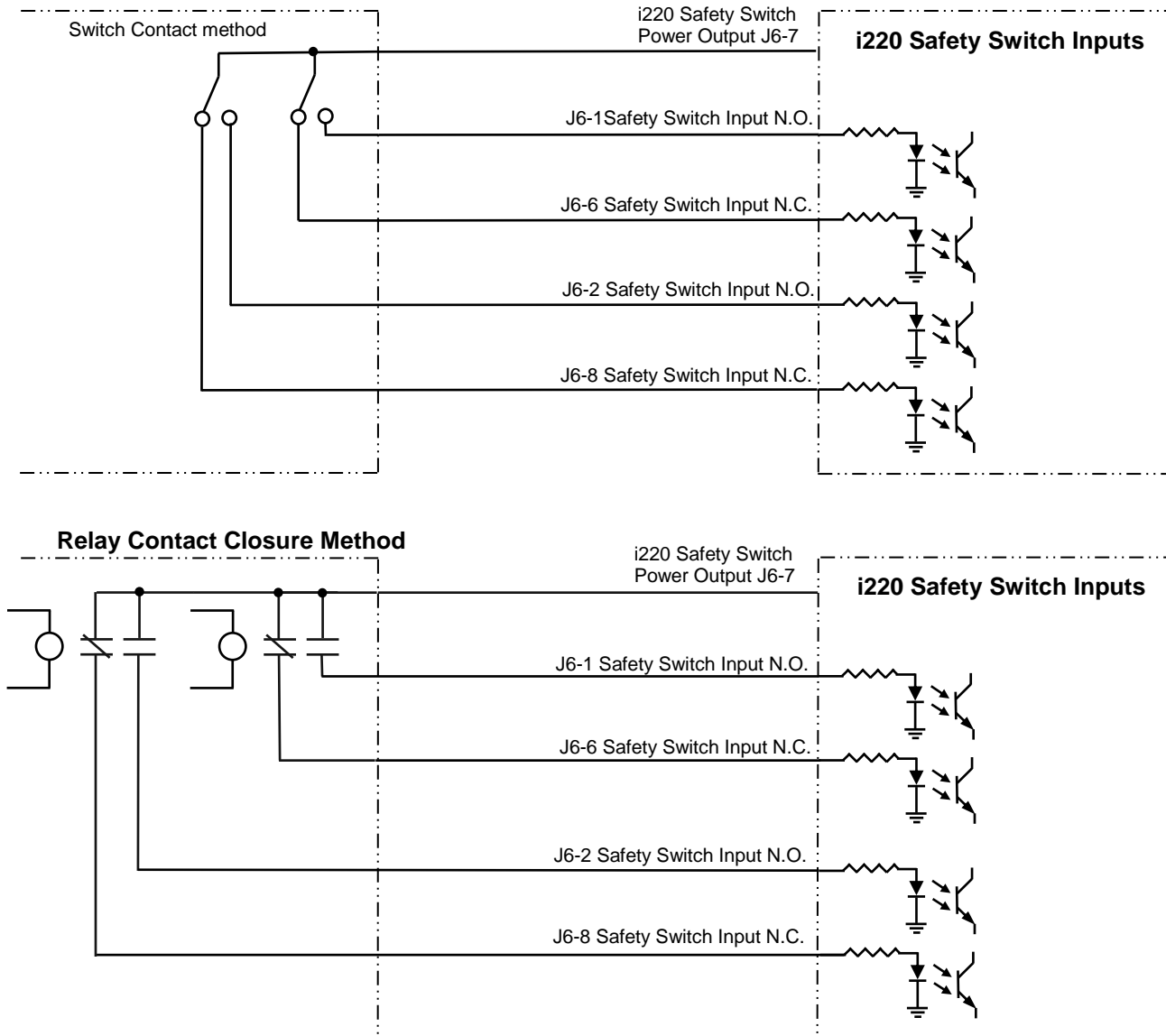
WARNING: Consult the appropriate local regulatory agency (OSHA, UL, CE, etc.) regarding all of the safety requirements for your automated machine. Dukane is not responsible for injuries related to improper safety circuits or safety guarding used in an automated machine. EN 12100-1/-2 and EN 60204-1 safety standards are recommended.



Notes:

1. To operate the iQ Ultrasonic Press System, J6 pins 3 and 9 must be maintained in a closed connection and J6 pins 4 and 5 must be maintained in an open connection.
2. If the connection between J6 pins 3 and 9 is opened, the ultrasonic output will be disabled and power will be removed from the pneumatic actuator.

Connecting an Automation Two Hand Anti-Tie-Down Safety Switches



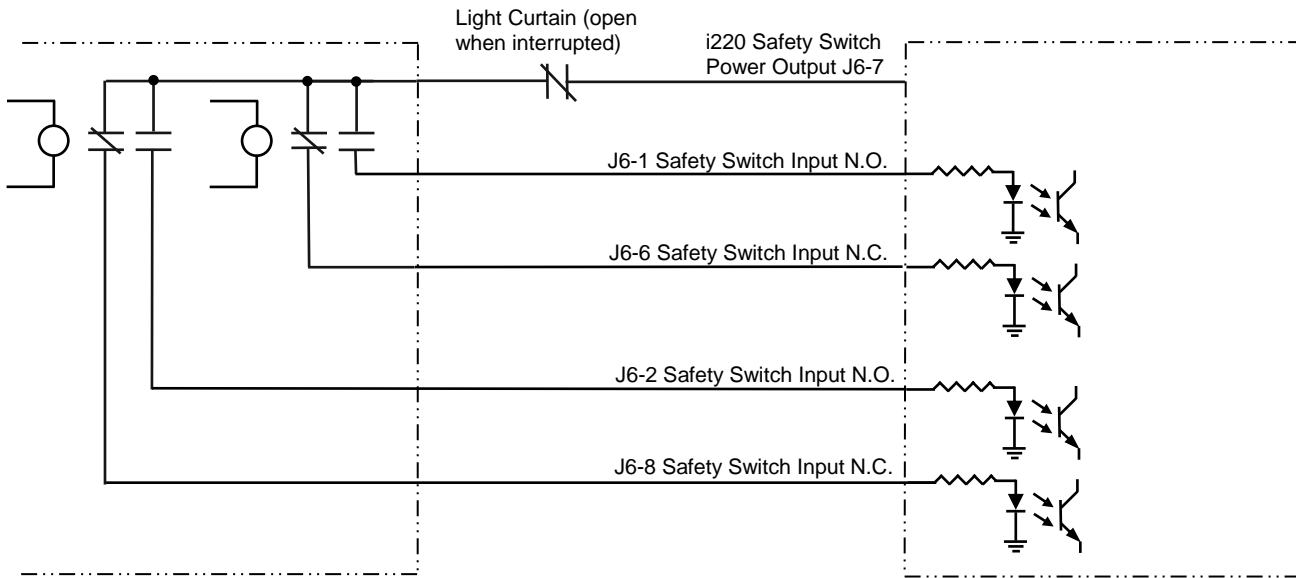
Notes:

1. The i220 press has four Anti-Tie-Down switch inputs. Two are Normally Open (N.O.) and two are Normally Closed (N.C.).
2. To activate a weld cycle, simultaneously connect the N.O. inputs (J6-1 & J6-2) to the Switch Power Output (J6-7) and disconnect the N.C. inputs.
3. These inputs must be returned to their idle state, N.C. inputs connected to J6-7 and N.O. inputs disconnected, before the next cycle can be initiated.

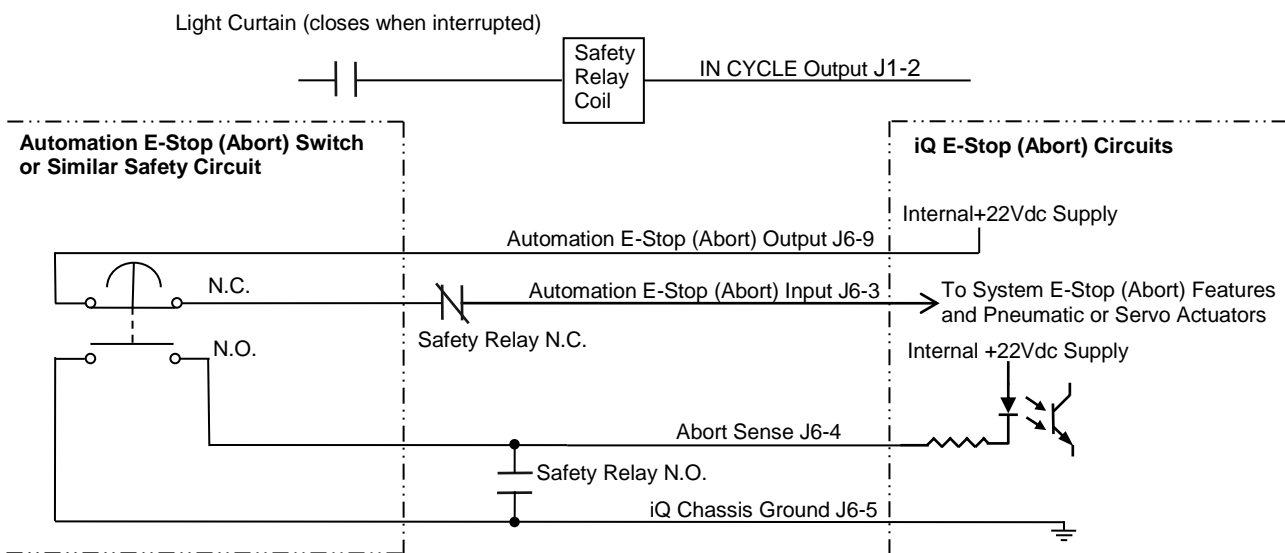
Connecting a Light Curtain

Some automated machines require light curtains to protect personnel from hazardous conditions, which includes the area where parts are loaded for ultrasonic welding. There are numerous ways to connect light curtains to Ultrasonic welders. The following schematic shows one of these ways. The essence of all connection schemes are to achieve safety while not causing nuisance tripping of the abort circuit. To do so, it is desirable to have the ABORT circuit activated by the light curtain ONLY after a press cycle is in progress. When the press is idle and parts are being loaded and unloaded, it is better to have the light curtains prevent a cycle from starting but to leave the ABORT circuit inactive.

Light curtain connections to prevent a cycle from starting. Light curtain disconnects +22V relay contacts



Light Curtain connections to cause an ABORT after a cycle is in process



Note: Both the above circuits should be incorporated for safety and ease of use.

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