Universal Kit connection information (Part #195002)

Thank you for purchasing the Universal Adapter Kit for the Auto Axcess, Auto Invision II and the Auto Deltaweld. This kit allows a robot or machine to control the welding power source using all available signals.

Level 1: The simplest method of control is to set all of the welding parameters in the welding power source and simply provide a Start signal. The welder will initiate the arc and keep welding until the Start signal is removed. (See Input Functions below.)

- If a motion interlock is needed, the Arc Established signal will indicate that there is an arc. (See Output Functions below.)

- If different operating values (Wire Feed Speed and Voltage or Trim) are needed for different welds, the values can be programmed in the welding power source programs and different programs can be selected with the Remote Program Select (RPS) signals. (See Input Functions below.)

- Set the power source to Arc On / No Analog for this method of control.

Level 2: More flexibility is available if analog signals are also used to control the power source. Set the welding processes in the power source and control the operating values (Wire Feed Speed and Voltage or Trim) externally.

- Select different welding processes while welding by setting processes in the different programs and using the RPS signals. (See Input Functions below.)

- Set the power source to Arc On / Analog for this method of control. The Auto Deltaweld must use analog signals and cannot select different processes.

Level 3: Complete control of the welding sequence requires that the Purge and Jog signals be connected (see Input Signals below). This allows external control for Preflow, Postflow and Burnback sequences.

- Set the power source to PS / Wire & Gas for this method of control.

Input functions:

Discrete on/off input signals from the external equipment to the welder are referenced to RD COMMON and include:

- Welding is accomplished by activating the CONTACTOR (START) signal on pin 69 or 35 as appropriate. The wire feed speed and voltage or arc length will depend on the signals on WFS COMMAND (pins 5 and 34) and VOLTS COMMAND (pins 9 and 16) referenced to RA COMMON. The wire feed scale is 100 IPM/volt, though the motor has limited range in operation (see manual). The voltage is 5 volts/volt for GMAW, with operational limits (see manual). In GMAW-P welding, the VOLTS COMMAND scale is 10 trim/volt; with 50 trim (5 volts) being the nominal arc length.

- Wire jogging is accomplished by activating the JOG signal on pin 64 or 47 as appropriate. The factory wire feed speed for jogging is 200 IPM. Retracting the wire is accomplished by activating the RETRACT signal on pin 58 or 46 as appropriate.
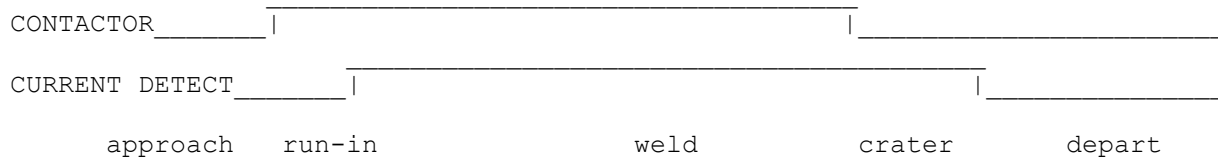
- Gas purging is accomplished by activating the PURGE signal on pin 67 or 23 as appropriate. Activating this signal when an error is showing on the display will clear the error.

- Remote Program Selection (RPS) is accomplished (if enabled) by activating the RPS-A, B, and C signals on pins 41, 63, 68 or pins 11, 12, 24 as appropriate. The pins form a binary number, with A having a value of 1, B having a value of 2 and C having a value of 4. The number shown on the display will be one more that the binary number selected. That is, binary inputs of 0 to 7 will result in displayed program numbers of 1 through 8.

- SENSOR ON (pins 27 (closure to RD COMMON), 29 (closure to +24 VDC)) is used on the Auto Axcess to put the unit into a touch sensing (searching for part) function. The welding wire will be energized with a current-limited voltage to allow the welder to sense when the wire touches the weldment.

- E-STOP (pin 3) provides a disabling function for the welding equipment whenever this pin is not connected to RD COMMON.

Output functions:

Discrete on/off functions:

Discrete on/off output signals from the welder to the external equipment are referenced to RELAY COMMON and include:

- CUR8RENT DETECT (Pin 62), which is actually an Arc Established signal. This signal is active when an arc is active. It is often used as a "handshake" signal with the CONTACTOR signal:

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                       _____
CONTACTOR_____|                                        |_____
                           _____
CURRENT DETECT_____|                                              |_____

        approach   run-in              weld          crater      depart

   ** This diagram assumes a Level 1 or 2 connection.
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- STANDBY (pin 2) will be active whenever the welder is powered and not in an ERROR condition.

- ERROR (pin 26) will be active when there has been an error detected by the welder. As mentioned above, errors can be cleared by momentary (50ms or more) application of the PURGE signal.

- WIRE STUCK (pin 61) is active shortly after the CONTACTOR signal is turned off if the wire cannot be freed from the weld puddle at the end of the weld. The same signal is available as an isolated pair of contacts on pins 49 and 51. This signal should prevent the welding torch and part from moving apart, as damage may be caused.

- WATER ERROR (pins 37 N.O. and 25 N.C.) is active whenever the Flow Detect is activated in Setup (if appropriate) and the Flow Detect pin on the Peripheral connector is not connected to RD COMMON.

- TOUCH SENSED (pins 18 (sourcing), 28 (sinking)) only on the Auto Axcess is active when the touch sense (searching) function is active and a part has been touched.

Analog functions:

Analog signals from the welder to the external equipment are referenced to RA COMMON and include:

- VFB (pin 6) is the actual arc voltage while welding and a reflection of the command voltage when not welding. The scale is 1volt per 10 volts.

- IFB (pin 7) is the actual arc current. The scale is 1 volt per 100 amps.

Discrete on/off pins:

All discrete on/off signals are maintained type, whether from the welder or external equipment.

Inputs:

Discrete on/off signals from the external equipment to the welder can be either a closure to RD COMMON or a closure to +24 volts dc (relative to RD COMMON) supplied by the external equipment. The current requirement for these signals will be less than 30 ma. per pin.

Closures to common pins are 3, 27*, 41, 58, 63, 64, 67, 68, and 69. Pins 53, 54, 65, 66 are also closure to common, but are connected with jumpers if used to identify the type of equipment being connected.

Closures to +24 volts DC pins are 11, 12, 23, 24, 29*, 35, 46, and 47.

Outputs:

Discrete on/off signals from the welder to the external equipment can be either a closure to RD COMMON or a closure to +24 volts dc (relative to RD COMMON) supplied by the external equipment. This is achieved by connecting RELAY COMMON to the external equipment's common or +24vdc. The signals are on pins 2, 25, 26, 37, 61, and 62.

One discrete on/off signals from the welder to the external equipment is an isolated pair of relay contacts on pins 49, 51.

In the Auto Axcess, pins 18, 28 are outputs referenced to RD COMMON rather than RELAY COMMON.

Analog pins:

Analog signals referenced to RA COMMON are on are on pins 5, 6, 7, 9, 10, 16, 19, 22, 34.

The various COMMON pins and their associated circuits are separately isolated. The commons can be tied together in the external equipment. Shielded cable should be used in making connections to prevent electrical interference.

Some of the pin functions are dependent on the settings made in the Setup and Control menus. See the manual for further information. Functions described here will be the factory default functions, assuming there are no jumpers to RD COMMON in pins 53, 54, 65, 66.

Common pins:

There are three isolated commons on the 72-pin connection:

Robot Digital (RD COMMON) is the common for on/off signals from the external equipment to the welder. It is present on pins 13, 17*, 21, 36, 44, 52, 56, 57, and 70.

Robot Analog (RA COMMON) is the common for analog signals in either direction. It is present on pins 4, 8, 20, 33.

Digital Output (RELAY COMMON) is the common for on/off signals from the welder to the external equipment. It is present on pins 1, 15.

Chassis ground:

Pin 71 is connected to chassis ground.

* Signals are only available on the Auto Axcess.

Bruce Casner 8-Jul-15